



SEA AND INLAND

# FISHERIES

REPORT FOR

1977

AN ROINN IASCAIGH AGUS FORAOISEACHTA  
(Department of Fisheries and Forestry)

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DUBLIN :

PUBLISHED BY THE STATIONERY OFFICE.

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# REPORT

OF THE

## MINISTER FOR FISHERIES AND FORESTRY

ON THE

## SEA AND INLAND FISHERIES

FOR THE YEAR

### 1977

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## PART I.

## SEA FISHERIES

In 1977, the total value of sea fish landings reached another record figure of £18.7m exceeding that of 1976 by £5.8m. The biggest increase occurred in the value of landings of pelagic fish. The value of such landings at £8.0m represented an increase of £3.8m or 90%. The value of shellfish landings also showed a significant increase of £1.0m or 25%. The weights and values of annual landings of sea fish (excluding shellfish) since 1968 are set out in the following table:—

TABLE 1

Year	Metric tons	£'000
1977	70,800	13,688
1976	68,800	8,880
1975	65,800	6,763
1974	75,000	6,982
1973	75,200	5,690
1972	75,700	3,900
1971	60,500	2,930
1970	67,300	2,809
1969	54,600	2,105
1968	42,500	1,669

Details of quantities and values of the different varieties of sea fish and shellfish landed in 1976 and 1977 are given in Appendix No. 1. The average price per metric ton obtained for each variety of sea fish (other than shellfish) from 1970 onwards is shown in Appendix No. 2.

The leading ten fishing ports of 1977 in order of value of fish landed were: Killybegs, Howth, Castletownbere, Galway, Fenit, Clogherhead, Burtonport, Skerries, Greencastle and Dingle. As compared with the corresponding order of importance in 1976, Howth

maintained its position in second place. The most noticeable change was the rise of Clogherhead from 11th position in 1976 to 6th position in 1977.

**DEMERSAL FISHERY**—At 18,887 metric tons, the total landings of demersal fish showed a decrease of 4,923 metric tons or 20%. Decreases on the 1976 figures occurred in almost all categories of demersal fish. Landings of cod decreased by 1,283 metric tons or 23% while landings of haddock, which showed the largest percentage decrease of all demersal species, fell by 620 metric tons or 46%. Whiting was the species caught in greatest quantity and was followed by cod, plaice, ray/skate and saithe in that order. The total value of the demersal fish catch increased by 22% from £4.7m to £5.7m in 1977. Cod was first in terms of cash earnings, followed by whiting, plaice, ray/skate and sole. These five varieties contributed 81% of the total value of the demersal fish catch.

Increases in average prices were achieved in most varieties. The overall average price of all demersal fish landed in 1977 was £302 per metric ton as compared with £195 per metric ton in 1976. This increase was due to the higher prices obtained for varieties such as turbot, sole and hake.

The weights, total value and average value of landings of demersal fish over the past ten years are shown in the following table.

TABLE 2

Year	Quantity	Value	Average Value per metric ton
	metric tons	£'000	£
1977	18,900	5,709	302
1976	23,800	4,652	195
1975	20,000	2,881	144
1974	19,500	2,527	129
1973	20,400	2,374	117
1972	17,100	1,568	92
1971	20,700	1,590	77
1970	15,300	1,428	93
1969	16,000	1,254	78
1968	15,900	1,112	70

**PELAGIC FISHERY**—The total pelagic catch of 51,879 metric tons was 6,896 metric tons or 15% more than the figure for 1976. The total value of the catch was £8.0m representing an increase of 88% on the 1976 figure of £4.2m.

**Herrings**—Landings of herring amounted to 23,129 metric tons valued at £6.0m compared with 22,012 metric tons valued at £3.2m in 1976.

The 1976/1977 winter herring fishery off the South coast began during September 1976 and continued until mid January 1977. Landings during January amounted to 1,262 metric tons. An early start to the season and continuous good weather meant that up to the middle of January there were a possible 89 fishing days and landings were made on 65 of these days. Nevertheless, catches throughout the season were disappointing. Small boats using drift nets also took part in the fishery during the season, but like the trawlers, their catches too were poor.

Landings from the South-West coast herring fishery, which was mainly exploited by boats fishing from Castletownbere, amounted to over 4,000 metric tons. This was a considerable increase on the figure for 1976, the most substantial landings being made during November and December. The value of the landings exceeded £1.0m.

At an EEC Council of Ministers (Agriculture) meeting on 15 February 1977, a regulation was adopted providing for, among other conservation measures, a ban on herring fishing in the Celtic Sea from 1 March to 31 December 1977.

During 1977 a total of 8,196 metric tons of herring valued at £2.1m were caught on the North West coast and landed mainly into Killybegs and Burtonport.

A total of forty-six vessels took part in pair fishing throughout the year, using mid-water trawls. Because of poor catches, many of these boats did not continue to fish herring for any great length of time. The major fishing took place during the autumn and winter months; however, it proved economical for some large trawlers to continue to fish for herring throughout the year.

A total of 4,813 metric tons of herring valued at £1.2m was landed along the West coast during 1977, a significant increase on the 1976 figure, while further quantities of fish caught off the West coast were landed into Killybegs.

Mainly because of the increased requirements of the Continental market, there was keen market demand throughout the year and no difficulty was experienced in the disposal of the catch. Herrings were exported to many countries including the Federal Republic of Germany, Netherlands, France, United Kingdom, Norway, Sweden, Poland and Denmark.

Exports of fresh, chilled or frozen herrings in 1977 amounted to 6,560 metric tons valued at £3,269,000 as compared with 8,485 metric tons valued at £2,587,000 in 1976. The quantity exported in salted and smoked forms was 7,653 metric tons valued at £4,385,000 as compared with 5,291 metric tons valued at £1,533,000 in 1976. A further 1,467 metric tons of herring valued at £1,268,000 was exported in prepared or preserved form.

The following table shows the total quantity and value and average value per metric ton of herrings landed in each of the past ten years.

TABLE 3

Year	Quantity	Value	Average Value per metric ton
	metric tons	£'000	£
1977	23,100	6,033	261
1976	22,000	3,133	142
1975	28,800	3,232	112
1974	39,600	3,950	100
1973	38,900	2,802	72
1972	47,800	2,116	44
1971	31,300	1,163	37
1970	45,500	1,275	28
1969	34,700	784	23
1968	23,000	497	22

*Sprats*—Landings of sprats decreased from 8,576 metric tons in 1976 to 6,055 metric tons in 1977, a decrease of 29%, while the value of the catch fell from £218,000 in 1976 to £199,000 in 1977.

*Mackerel*—Landings of mackerel showed a considerable increase in 1977, rising from 14,394 metric tons valued at £877,000 in 1976 to 22,695 metric tons valued at £1,748,000. The average price was £77 per metric ton as against £61 in 1976.

The chief landing places for mackerel were: Killybegs, Castletownbere, Burtonport, Valentia, Dingle, Galway and Howth. Statistics of mackerel landings over the past ten years are given in the following table:

TABLE 4

Year	Quantity	Value	Average Value per metric ton
	metric tons	£'000	£
1977	22,695	1,748	77
1976	14,394	877	61
1975	13,354	584	44
1974	8,525	365	43
1973	8,314	381	46
1972	4,592	147	32
1971	3,105	118	38
1970	1,051	40	38
1969	1,616	45	28
1968	2,164	49	23

*SHELLFISH*—The value of the shellfish catch at £5.0m showed an increase of £1.0m on the value of the 1976 catch. Landings of Dublin Bay Prawns increased from 1,852 metric tons in 1976 to 2,804 metric tons in 1977 with a consequent increase in value from £0.6m to £1.1m. Landings of oysters increased from 885 metric tons in 1976 valued at £0.6m to 924 metric tons valued at £0.8m in 1977.



The value of shellfish landings over the past ten years are given in the following table:—

TABLE 5.

Year		£'000
1977	...	4,936
1976	...	3,886
1975	...	2,374
1974	...	1,754
1973	...	1,773
1972	...	1,417
1971	...	1,308
1970	...	1,102
1969	...	891
1968	...	735

**EXPORTS**—At £25m exports of fish and fish products, including both sea and fresh water fish preparations (see Part II of this Report) established a new record. Exports of sea fish and fishery products were valued at £20.6m as against £18.5m for 1976. Details of exports are given in Appendix No. 4.

**PERSONNEL AND VESSELS**—The number of fishermen engaged full time rose from 2,495 in 1976 to 2,662 in 1977, while the number of part-time fishermen rose from 4,898 to 5,517. There was an overall increase in the number of vessels engaged in fishing in 1977, the total being 2,725 compared with 2,462 in 1976. A further increase occurred in the number of vessels over 75 gross tons in the fleet, the total being 83 compared with 78 in 1976. The number of motor fishing vessels over 25 gross tons which are responsible for most of the wetfish catch rose from 362 in 1976 to 375 in 1977 while the number of motor vessels under 25 gross tons rose from 875 in 1976 to 983 in 1977.

Further details are given in Appendix No. 7.

**TRAINING OF FISHERMEN**—The scheme for training boys as fishermen continued in 1977. As heretofore the period of training extended over twelve months, of which five months were spent on theoretical/practical training at the National Fishery School, Green-castle, Co. Donegal, and during the remaining seven months practical fishing experience was acquired by the trainees aboard selected fishing vessels. Two groups of 30 and 26 boys, respectively, commenced training under the scheme on 31 January and 5 September at the National Fishery School and these courses were still in progress at the

end of the year. Over the past ten years 572 candidates have completed the training course.

Two shore courses to facilitate eligible experienced fishermen to qualify as skippers were also held in the National Fishery School during the year. Eleven fishermen who availed of the courses were subsequently successful in obtaining certificates of competency under the Merchant Shipping Acts. Since its inception in 1958 this scheme has assisted 145 fishermen in obtaining certificates.

*AN BORD IASCAIGH MHARA*—The Board received from the Fisheries Vote for the year ending 31 December, 1977 a grant of £4,928,000 in aid of administration and current and capital development. Repayable advances totalling £2,453,000 were also made to the Board from the Central Fund mainly for the provision of boats and gear.

The scheme of loans and grants and leasing arrangements for the acquisition of sea fishing boats and gear continued in 1977. Some amendments were made to the scheme during the year, the main ones being an extension of the repayment period for boat purchase loans and an improvement in the terms of financial aid for boat improvements. Under the scheme the Board assisted Irish fishermen in acquiring 73 new vessels during the year of which 70 were built in Irish boatyards.

The Board's export market development policy continued to concentrate on achieving added value through the expansion of processing activities.

Port courses for the training of fishermen as skippers were held by the Board at Howth and Arklow, while lectures for fishermen were held at various ports in chartwork, seamanship, net mending, safety at sea and fish handling. As well, on-board training instruction in gear technology and acoustic fish detection was arranged by the Board at fishing ports.

The Board's Annual Report on its activities in 1977 is published separately.

*SEA FISHERIES PROTECTION*—Protection of the exclusive fishery limits involving regular patrols by vessels of the Naval Service of the Department of Defence was maintained in 1977. Prosecutions were instituted against the skippers of twenty-seven foreign vessels who had been arrested for illegally entering and fishing inside our exclusive fishery limits; five of these were also prosecuted for having undersized fish on board and four for having undersized nets. Convictions were secured in seventeen cases of which sixteen were under appeal at the close of the year. Ten of the cases were referred to the European Court for a ruling on the compatibility with European

Community law of the Irish measures under which they were prosecuted.

In the conduct of all cases and in the enforcement of fishery protection measures generally, the co-operation of the Garda Síochána was readily available.

**MARINE WORKS**—At Killybegs Fishery Harbour Centre, expenditure on development works during the year was £33,130.

At Castletownbere Fishery Harbour Centre work continued both on the improvement of the mainland wharf and on the development of the industrial estate at Dinish Island. Plans for the final layout of the mainland wharf were drawn up and kerb laying and the surfacing of the wharf were almost complete at the end of the year. A hand rail was provided at the old pier. The Fisheries Research Station and the syncrolift control house were completed, in addition to the erection of the wharf structure at Dinish Island. Work on the completion of this wharf was well advanced at the end of the year. Considerable progress was made on the development of sites by re-filling to design levels with imported fill after the removal of the original peat. Designs for water supply, power and public lighting were finalised and preparatory work for laying on these services was commenced. Site investigations for the effluent disposal outfall pipe were completed and the design of the sewerage system was well advanced. Several enquiries for fish-based and other industries were processed, and negotiations for the leasing of sites to various commercial interests are going on.

Expenditure on the development works at Castletownbere during the year was £397,770.

Discussions were held with fishermen and other fishery interests at Howth, Co. Dublin to explain the proposals for Stage I development of Howth Harbour as a Major Fishery Harbour.

At Dunmore East a number of enquiries for the leasing of the remaining sites for fish processing premises were handled and negotiations are in hand.

The Department in conjunction with local authorities and harbour authorities arranged for improved fishery facilities at Wicklow, Arklow, Courtown, Wexford, Travarra, Renard and Fenit.

At Rossaveel, Co. Galway, construction work on the new pier and causeway was completed. The work was financed by Roinn na Gaeltachta at a cost of over £1m. Other fishery harbour improvement works grant aided by the Department of Fisheries were completed during the year at Portevlin, Co. Donegal; Enniscrone, Co. Sligo; Ballyglass, Co. Mayo and Rosroe, Co. Galway. Improvement works which were recommended by the Department and financed by

Roinn na Gaeltachta were completed at Inishmeane, Co. Donegal and Seanach an Mheas, Co. Galway.

Fishery harbour works assisted by grants from the Department of Fisheries were in progress at the end of the year at Rosbeg, Co. Donegal and at Fenit, Scraggane, and Cromane, Co. Kerry. Improvement works which were recommended by the Department and financed by Roinn na Gaeltachta were in progress at the end of the year at Burtonport, Bunbeg, Leabgarrow/Stackamore and Magheraroarty, Co. Donegal; Killeany, Co. Galway and Dingle, Co. Kerry.

### *EUROPEAN ECONOMIC COMMUNITY*

*Common Fisheries Policy*—Ireland's exclusive fishery limits were extended to 200 miles from 1 January in concert with those of the other maritime Member States of the EEC. The position as regards 3rd countries fishing in the newly extended zone is dealt with in the subsequent section.

Negotiations on the review of the Common Fisheries Policy resumed at the Council (Foreign Affairs) on 8 February and the Agriculture Council on 15 February. At the latter meeting a Regulation was adopted providing for various conservation measures including a ban on herring fishing in the Celtic Sea from 1 March to 31 December 1977. These measures were not considered adequate to meet the conservation needs of the Irish fishing industry in the context of the agreement reached in the Hague on 30 October 1976. Accordingly the Minister for Fisheries, Mr. P. Donegan, T.D., on 16 February 1977, made Orders under the Fisheries Acts, the effect of which was to prohibit fishing from 1 March 1977 by all vessels exceeding 33 metres registered length or 1100 brake horse-power in a designated part of our exclusive fishery limits bounded by 56° 30' N latitude, 12° W longitude and 50° 30' N latitude. Following consultations with the Commission, it was agreed to defer enforcement of the Orders for a period of two weeks during which time the Commission would put forward fresh proposals for interim conservation measures.

Further proposals for a Council Regulation fixing fishing quotas for the main species for International Council for the Exploration of the Sea (ICES) zones VI and VII (i.e. in the waters adjacent to the Irish coast) to the end of 1977 to bring about a reduction of catches by the other member States and providing for a scheme of advance fishing plans to cover those zones for the period ending 30 June 1977 were examined by a special High Level Working Group on 9 March 1977. The Minister for Fisheries stated at a meeting of the Council (Agriculture) on 14 March 1977 that Ireland was willing to consider these proposals but that details of their operation would need to be elaborated. As a consequence the Minister agreed to suspend again the enforcement of Ireland's unilateral fishery conservation measures until the meeting of the Council of 25 March 1977 when the pro-

posals, following further discussions by the Working Group, would be examined again.

At the Council on 25-27 March 1977 revised Commission proposals were discussed. The scheme envisaged in the draft Council regulation provided that member States fishing in the extended Irish fisheries zone would submit advance fishing plans to the Commission for approval in consultation with the member States concerned. The fishing plans would have to indicate the number of vessels to be deployed, their length and engine power, names and registration numbers and fishing periods. The fishing plans would have to "ensure that fishing activities are not unduly concentrated in the divisions of sub-zone VII adjacent to the Irish coast or in that part of division VIa situated south of latitude 56° 30' N". The UK was unable to agree to the proposals as their adoption by the Council would have meant the imposition of quotas in some sea areas under British jurisdiction; in consequence the Council failed to reach any agreement. In view of this failure the Commission requested that Ireland should amend its unilateral measures on the broad lines of the proposals which had been before the Council as in its view the unilateral measures taken were not in conformity with Annex VI of the Council Resolution of 3 November 1976.

The Government on 1 April 1977 decided (a) to retain and to enforce its unilateral measures for the conservation and management of fishery resources, and (b) to invite at the same time member States of the European Economic Community to submit fishing plans to the Irish Government for approval with a view to the subsequent introduction by the Government of a scheme on the lines which had recently been proposed by the Commission as the basis of a Community measure.

At the meeting of the Council (Foreign Affairs) held in Luxembourg on 5 April 1977 the Minister for Foreign Affairs, Dr. G. Fitzgerald, T.D., reiterated Ireland's position regarding an exclusive coastal band in the revised permanent arrangements and pointed out the necessary link between the internal and external fisheries policies. For the Commission, Commissioner Gundelach expressed regret that Ireland had proceeded with its unilateral conservation measures but noted that the Irish Government was leaving open the possibility of adopting later an alternative national measure which would be based on the Commission's March proposals for fishing plans, suitably modified.

Following the arrest of Dutch fishing vessels on 29 April 1977 for contravening the unilateral fisheries conservation measures the Commission on 6 May 1977 in a Communication in accordance with Article 169 of the EEC Treaty, alleged that Ireland was in breach of its obligations under the Treaty by discriminating against fishing vessels from other member States, and asked that Ireland should comply with this opinion before midnight on 10 May 1977. The Government was unable to accept the Commission's opinion and did

not consider that it was obliged to take the steps requested. Accordingly pursuant to Article 169 of the Treaty, the Commission referred the matter to the European Court of Justice asking that the Court declare that by introducing its unilateral measures the Government of Ireland had failed to fulfil an obligation imposed on it by the EEC Treaty. At the same time, pursuant to Article 186 of the EEC Treaty, the Commission requested the Court to prescribe as an interim order that the Government should formally suspend until the determination of the main action its unilateral measures to the extent, at least, appropriate to bring them into line with the Commission's March proposals for fishing plans. By written observations, submitted to the Court on 18 May 1977, in response to the Commission's request under Article 186, Ireland detailed its contention that the unilateral measures were not contrary to its obligations under the EEC Treaty and contended that the Commission's request for an interim order under Article 186 of the EEC Treaty was not well founded and should not be granted. With reference to the Commission's suggestion that the Court should in effect order Ireland to suspend its measures and adopt fishing plans in their place Ireland stated that while it was always willing to re-examine the need for maintaining the Sea Fisheries Orders if suitable alternative proposals were put forward, the alternative suggested by the Commission was so complex that it would have to be the subject of detailed negotiations between the member States and should not be a solution imposed by the Court.

At an oral hearing in Luxembourg on 21 May, 1977, the Court as an interlocutory measure, ordered that a decision on the application submitted by the Commission under Article 186 be deferred, the hearing should be resumed on 22 June 1977 and the parties should submit by 18 June 1977 at the latest a written report on the result of their negotiations conducted in pursuance of the Order. These negotiations were to find an alternative solution for which the Commission had proposed the fishing plans scheme to the Court.

Following consultations between the Irish Government and the Commission a Joint Report was submitted to the Court on 18 June 1977 and the Court was asked to postpone the hearing which had been fixed for 22 June 1977 so that a further report could be submitted by both parties before 1 July 1977.

On 1 July a Second Joint Report was made to the Court. This summarised developments since the first Report was submitted and indicated that the Irish authorities had been unable to make adequate technical assessment of the fishing plans which had been submitted by other interested member States in the absence of outstanding data which had been requested but not yet received from these States. Following further separate reports to the Court by the Commission and Ireland a further hearing of the European Court of Justice took place on 11 July 1977. The Irish legal representatives applied for a substantial adjournment on the ground that a new Irish Government had taken office on 5 July 1977 and required a reasonable time to

consider the whole situation and take a collective decision as required by the Constitution. The Commission opposed this application. The court refused to grant an adjournment and ordered as follows:

1. Ireland shall suspend, by 0.00 hours GMT on 18 July 1977 at the latest and until judgement has been given in the main action, the application to fishing boats registered in any of the member States, of the orders of the Minister for Fisheries entitled the Sea Fisheries (Conservation and Rational Exploitation) Order, 1977 and the Sea Fisheries (Conservation and Rational Exploitation (No. 2)) Order 1977.
2. Until judgement has been given in the main action Ireland may, with the consent of the Commission, adopt in the sea areas within its jurisdiction any other measures intended to ensure the protection of fish stocks which are in accordance with the provisions of Community Law and with the objectives of the Common Fisheries Policy.

At a meeting of the Council (Agriculture and Fisheries) on 18-19 July 1977 the newly appointed Minister for Fisheries, Mr. B. Lenihan, T.D., put forward proposals for the interim conservation of herring stocks involving the closure of certain herring fisheries. A package of measures was agreed including the closure of the West of Ireland herring fishery until 31 August 1977, the Mourne herring fishery within 12 miles of base lines in the Irish Sea until 31 December 1977, the North Sea herring fishery until 30 September 1977, and the extension of the ban on herring fishing in the Celtic Sea to adjoining areas in the Bristol Channel and the western portion of the English Channel until 31 December 1977.

At the Council of Ministers (Fisheries) meeting on 24-25 October 1977, a number of new proposals were put forward by the Commission for discussion. These consisted of

- technical measures for the conservation of fishery resources adopted with some modification from North East Atlantic Fisheries Commission recommendations,
- quotas for 1978,
- arrangements for the supervision and control of fishing activities,
- aid measures for the reorganisation of the fishing industry, and
- compensation for losses incurred by fishermen because of the closure of herring fishing in the Celtic and North Sea.

No decisions were reached on any of these proposals and further discussion on them was deferred to a special Council of the Fisheries Ministers on 5, 6 and 7 December 1977.

At the October Council Meeting, the Minister for Fisheries, Mr. B. Lenihan, T.D., said that Ireland accepted the Commission's proposals as a basis for discussion but that the absence of any proposal

for an adequate coastal zone reserved for Irish fishermen was a serious defect in the package. The Minister also pressed for the maintenance of the residual right of member States to take conservation measures in the event of the Community not acting on scientific advice, and that member States should retain the right to take measures for the conservation and management of strictly local stocks.

At the special Fisheries Council on 5, 6 and 7 December 1977, no decision was taken on the proposals made by the Commission at the October Council and discussions were further postponed until 16 January 1978. Under a "stop-the-clock" arrangement, the Council agreed that the existing interim measures for the conservation of herring stocks, involving the prohibition on herring fishing in the Mourne fishery (within 12 miles of the baselines in the Irish Sea), the Celtic Sea and the North Sea, which were due to expire on 31 December 1977 would be formally extended until 31 January 1978. This decision was implemented by Council Regulation 2899/77. The December Council also decided that existing local National measures on herring conservation, due to expire on 31 December 1977, should also be extended to 31 January 1978 and that fishing activity should continue until that date at the present level.

There was little discussion on the proposed quotas for 1978. However the Minister for Fisheries pointed out that Ireland was seeking increases over the levels proposed for certain species including herring and mackerel for International Council for the Exploration of the Sea zone VI covering the North West coast of Ireland. The Minister also maintained Ireland's position on the question of an exclusive coastal zone.

A further proposal by the Commission on financial aid to Ireland and Denmark for fishery protection was presented by the Commission to the Council at the beginning of December but was not considered at the Council of 5-7 December. On the subject of the request by Ireland and the United Kingdom for the right of member States to take unilateral action to protect stocks in the event of failure by the Community to do so a proposal was made by the Council Presidency which would allow member States to take such action subject to clearance by the Commission. The Commission could amend or annul any unilateral measure proposed in which event an individual member State could appeal to the Council. The proposal met with the approval of all member States except the United Kingdom.

At an oral hearing of the European Court of Justice in Luxembourg on 14 December 1977, the Court considered the matters referred to it for a preliminary ruling by the Cork District Court in the case of the Minister for Fisheries against certain Dutch skippers on alleged illegal fishing in Irish waters in contravention of the unilateral measures taken by Ireland. The hearing of the substantive case brought by the EEC Commission against Ireland for an alleged breach of the EEC Treaty arising out of the introduction of the same measures took place on the same day. The options of the Advocate-



General to the European Court of Justice on both of these cases was to be delivered on 19 January 1978 after which the judgements of the Court would follow shortly.

**ARRANGEMENTS WITH THIRD COUNTRIES**—As a result of the extension of our exclusive fishery limits to 200 miles from 1 January, vessels of countries such as Bulgaria, Rumania and Cuba which had not traditionally fished in Community waters were excluded from the 200-mile zone. Vessels of the USSR, Poland and the German Democratic Republic were permitted to continue to fish for the first three months of 1977 on a limited basis. Their catch was confined to limited quotas of mackerel and horse mackerel, so far as the Irish zone was concerned, and these would be taken only in certain ICES sub-zones none of which were nearer than 50 miles to the Irish coast.

Certain countries which had entered into preliminary negotiations with the Community were also permitted to continue to fish in the Community zone in the three-month period. Of these only Spain, Norway and the autonomous Faroe Islands are relevant to the extended Irish zone. Neither Norway nor the Faroes had done any significant fishing in the Irish 200 mile zone and this position would be maintained pending Community negotiations for permanent arrangements with these countries. Spain has certain contractual rights under the London Convention of 1964 to fish off the Irish coast and pending negotiations by the Community with that country Spanish fishermen were permitted to catch certain limited quantities of hake and horse mackerel for the first three months of 1977 in waters of the member States.

Subsequently, on 28 January 1977 agreement was reached on detailed control measures to apply to vessels of the USSR, Poland and the German Democratic Republic. Only vessels licensed by the Community would be permitted to fish in the zones of the member States and the number of licences was to be strictly limited.

The above interim arrangements were extended by Council Regulations with certain amendments to 30 September, 1978. However, following the introduction in September 1977 by the Soviet Union of restrictions on fishing by certain Community member States in the Barents Sea, Soviet fishing in the Community waters was confined by Council Regulation 2158/77 of 30 September 1977 to certain areas off Greenland.

The Council at its meeting of 26-27 September 1977 adopted a Regulation 2155/77 extending for two months the autonomous quota and licensing arrangements for the German Democratic Republic and Poland. In view of the failure of the USSR, the German Democratic Republic and Poland to indicate their intention of continuing negotiations on framework fisheries agreements with the Community, those autonomous arrangements were not further extended when they expired on 30 November 1977.

The Community's interim autonomous arrangements for Spain and Sweden were extended by Council Regulations 2160/77 and 2161/77, with certain amendments, to 31 December 1977 and subsequently to 31 January 1978.

**COMMON ORGANISATION OF THE MARKET**—Customs duties on fish and fish products exported to and imported from EEC countries were finally abolished with effect from 1 July 1977 under the Accession Treaty arrangements.

**FEOGA INDIVIDUAL PROJECTS SCHEME**—Under the 1977 FEOGA Individual Project Scheme of the EEC, Irish fishery projects comprising the construction of eight fishing vessels, three marketing/processing projects and one oyster farming project were approved by the Commission for aid amounting to over £850,000.

**WITHDRAWAL BY IRELAND FROM THE NORTH-EAST ATLANTIC FISHERIES COMMISSION (NEAFC)**—Ireland is a party to the North-East Atlantic Fisheries Convention which entered into force for Ireland on 27 June 1963. The purpose of the Convention is to provide for conservation and rational exploitation of fish stocks in the North-East Atlantic Ocean and in adjacent waters.

The Foreign Ministers of the European Communities meeting at The Hague on 30 October 1976 agreed, in the context of extension of fishing limits to 200 miles, that for the future proceedings of the international fisheries bodies, such as the North-East Atlantic Fisheries Commission (NEAFC), set up by the Convention, the Community and the Member States would act in concertation. It was agreed that Member States would take a decision by 31 December 1976 on the question of withdrawal from NEAFC. In accordance with Article 17 of the Convention a contracting party may denounce the Convention and any such denunciation shall take effect twelve months after the deposit of such denunciation. It is the intention that the Community as such would become a member of a reconstituted NEAFC. A Working Group on the revision of the Convention has been established.

On 20 December 1976 the Council of Ministers agreed on the text of a draft notification to the Government of the United Kingdom, which acts as the depository Government for the purposes of the Convention, whereby each member State would denounce the present Convention. On 22 February 1977, the Department of Foreign Affairs on behalf of the Government lodged notification of Ireland's denunciation of the Convention, to take effect one year later.

#### **RESEARCH AND DEVELOPMENT**

During the year, six Fishery Leaflets were published, the details of which are given on page 79. The Research and Development work

of the marine staff concerns itself with pelagic fish (species living above the seabed for most of their lives), demersal fish (fish living mainly on or near the seabed), shellfish, and studies of the environment, including pollution.

## *PELAGIC SPECIES*

### *Herring*

Investigations were continued on the most important fisheries around our coast. The serious situation that exists in most of the stocks is reflected by very low stock sizes in the Celtic Sea and in the Irish Sea. In both the Mourne stock, which is fished in the Irish Sea, and in the Celtic Sea stock, recruitment has been virtually absent in recent years and both stocks are affected by continuing catches of juvenile herring in the industrial fishery in the Irish Sea. The stock that is fished off the northwest coast, i.e. off counties Mayo, Sligo and Donegal, has also been affected by a very serious decline in recruitment which has caused a decrease in the adult stock. This situation also exists, but to a lesser extent in the West coast fishery i.e. in the fishery exploited off Galway. However, the relationship between the Galway and Donegal herrings is not yet clear and it would appear that this problem will only be solved by initiating a large scale tagging programme for this area.

The prohibition on fishing in the Celtic Sea meant that some independent method of measuring stock size apart from that which relies on the success of the commercial fishery must be found. For this purpose a trawl survey was initiated in September 1977 and continued until the end of the year. The results from the survey confirmed the scientific opinion that the herring stock was very small in the area.

### *Mackerel*

Sampling of catches in the fisheries around the coast was increased during 1978. This was in line with the increasing interest in the fishery in recent years. The catches off the west coast, particularly in the autumn, were composed of very old fish, mainly over ten years old. A number of tagged mackerel released from a Norwegian tagging experiment off the southwest coast were recovered from the catches landed for reduction at Killybegs.

### *Sprats*

The investigations into the sprat fishery in the eastern Celtic Sea and in the Irish Sea were continued. It was possible to make a preliminary estimate of the population in both areas—these were considered to be about 20,000 tonnes in each area. The sprats in the Celtic Sea seemed to be a considerably older population than in the Irish Sea.

### *Industrial Catches in the Irish Sea*

Isolated samples of the industrial catches landed at Mornington were continued during 1977. This is intended to obtain the percentage composition of the species which are contained in the catches.

### *I.C.E.S.*

Most of the scientific investigations were geared in one way or another towards the assessment groups established by the International Council for the Exploitation of the Seas. These estimates are eventually considered by the EEC and are thus the basis on which our fisheries are regulated. For this reason an officer of the Department attended both the herring and mackerel assessment working groups which met in Copenhagen during the year.

### *DEMERSAL SPECIES*

#### *Cod*

The quarterly catch sampling programme initiated in 1975 continued with samples of about 2,000 at Howth and 1,000 at both Killybegs and Kilmore Quay, with smaller numbers at Galway, Castletownbere and Greencastle. Findings indicate that the 1973 and 1974 year classes were strong off Donegal, especially the former, whilst age-group 1 codling (1976 year-class) were very numerous in Greencastle landings. In the Irish Sea 1974 and 1976 were strong year-classes, so the prospects for the next year or two are moderately good there also. Data from Galway and Castletownbere have not yet been examined in detail.

#### *Haddock*

3,600 haddock were sampled at Killybegs, the premier port for this species, with small numbers at Galway, Greencastle and Castletownbere. The 1974 year-class has now established itself as the largest since the great 1967 year class, though probably only in the region of 30-50% of the strength of the latter; however catches should not fall seriously in 1978 or 1979.

#### *Whiting*

Over 3,000 whiting were sampled at both Howth and Killybegs, with a further 1,300 at Galway and 500 at Greencastle. The 1974 year-class (age-group 3), again showed up strongly off Donegal, but succeeding year-classes have been relatively poorer, and the catch now appears to be in decline. In the Irish Sea, catches were lower than in 1976, but higher than in other recent years; the strength of the 1976 year-class should prevent decline in the immediate future, though with this rather short-lived species, the good landings due to a strong year-class are of rather brief duration.

### *Plaice*

Sampling of plaice included over 2,000 at Greencastle, at Howth and at Kilmore Quay and around 1,500 at Killybegs and at Galway. Only Irish Sea data have been analysed in detail, and these suggest that the reasonable stability of the Irish catch is liable to be maintained due to the apparent strength of the 1975 year-class though it should be noted that non-Irish catches in the Irish Sea have fallen consistently since about 1973. In addition to port sampling, spring and autumn beam trawl cruises were undertaken to monitor the strength of pre-recruit age-groups (0 and 1) on the east coast nursery grounds. The findings of these will gradually become more valuable as a long time-series is built up.

### *Sole*

No investigations were carried out during the year.

## *SHELLFISH*

### a) *Crustacea*

#### *Dublin Bay Prawn (Nephrops Norvegicus)*

Small-scale port sampling was carried out at Skerries and two mesh-selection experiments were carried out during the summer, using one boat in June with small-meshed covers on the trawl, and comparing results of two boats making parallel hauls in August.

Results showed that a uniform 70mm mesh trawl caught 50% of a typical prawn trawl catch at a prawn carapace length of 23mm; 75% at about 26mm and 90% at about 29mm, indicating that the adoption of a 70mm trawl would lead to substantial immediate losses in the catch of very small prawns only, which would thus survive to grow larger to enter the fishery subsequently.

### *Lobsters*

During 1977 the return of tagged lobsters was monitored for the third and final year in Kilmore Quay, Co. Wexford. Only 7 lobsters were recaptured out of 500 branded and released in 1974 and 25 released in 1975. Over a six-week period during 1977, lobsters from the commercial catch in Kilmore Quay were measured for length, weight and maturity.

### b) *Molluscs*

#### *Oysters*

The Department continued to advise on research and development matters concerned with the public and private sectors. Close co-operation was maintained with Beirtreach Teo., and experimental

oyster research was carried out with respect to hatchery cultivation of juvenile oysters and the on-growing of these on a variety of floating raft structures.

### *Mussels*

Various inshore waters were examined for their potential as grounds suitable for mussel farming. Close co-operation was maintained with Beirtreach Teo for the development of large scale raft cultivation of mussels. This type of mussel farming was pioneered by Fisheries Division in the early 1970's and the current practical experiments are the outcome of this research.

### *Escallops*

The object of the Department's scallop research programme is to establish techniques for the development of scallop farming. Escallop farming will not become successful unless a cheap and consistently reliable method of spat production can be found, and current research is mainly in this subject-area.

In 1977, 2,500 collector bags were placed in Lough Ine in order to trap young scallop (spat) but settlement was found to be very poor. It appears that in this area spat settlement is not consistent from year to year, since spat settled in reasonable numbers in 1974 and 1975 and heavy settlement took place in 1976.

During diving operations in the course of 1977, scallop spat were seen attached to a number of organisms and much valuable information was gathered on the biology of the younger stages. It was learned that mortality during those younger stages can be very high due to starfish and crab predation, and reseeded experiments in Lough Ine have confirmed that predation is responsible for great losses.

Escallops were successfully "grown on" in lantern nets, but the appearance of the shell became spoiled by heavy fouling from serpulid worms. Bottom culture within enclosed areas of the sea floor should avoid this problem.

Although there is good reason to believe that a viable scallop culturing industry could be developed in the future, further experimental work is required on the consistency of annual spatfall in a number of areas. Methods of predator control also need to be further developed. These subjects will be investigated in 1978.

## *MARINE POLLUTION* (see also under Engineering—page 24)

### *Longterm environmental and fish quality monitoring*

Heavy metal levels in fish and shellfish from ports of landing around the coast continued to be monitored; this year, the ICES

Baseline study of Pollution in the Oslo Commission and ICNAF areas (N.E. Atlantic) was completed. Subsequently, most monitoring has concentrated on the Irish Sea area. Metal levels from all over oyster beds were surveyed and an updating of the 1974 Mussel bed survey was started.

Since many of these beds are associated with industrialised estuaries, they provide useful information on long-term water quality. In conjunction with this survey, heavy metal levels in estuarine waters were analysed from Waterford Harbour, Kinsale Harbour and Tralee Bay. Sediment samples were collected from 40 stations around the coast, including all the major estuaries.

#### *Monitoring and baseline studies related to licensed discharges*

The area off Cork, latitude 51° 34' to 51° 37' north and longitude 7° 52' to 8° 13' west in which licensed dumping is permitted, was re-visited in the summer, and following publication of the Dublin Bay Report, an initial survey around the sewage sludge dumping ground in Dublin Bay was made.

The baseline survey of Killala Bay was completed; it consists of detailed surveys of eight rocky shore sites with a rather more limited survey of the benthos in the area of discharge. In addition, sediment samples were analysed for heavy metal levels.

As usual, proposals for the licensing of discharges under the Fisheries Acts were examined and recommendations on licence conditions were made.

#### *Short-term projects and events*

As in 1976, a 'Red-Tide' occurred off the south coast in July and August. In this case, the causative organism was the aberrant dinoflagellate '*Noctiluca*'. Blooms occurred inshore mainly in the Youghal area, but were also noted from the southwest. Offshore, for three days, very extensive blooms occurred between Fastnet and Helvick Head.

### **FISHERY RESEARCH STATIONS**

The Fishery Research Station at Castletownbere was completed and occupied during the year. Work on the new Fishery Research Station at Abbotstown, Co. Dublin which replaced the unsatisfactory accommodation in Cathal Brugha Street, Dublin, was also completed and occupied before the end of the year. Proposals for the provision of Fishery Research Stations at Kinsale, Co. Cork and Ballyglass, Co. Mayo were being examined. The need for additional accommodation at Dunmore East Fishery Research station was also being examined.

## ENGINEERING

### *Fishing Ports and Landing Places*

In continuation of the arrangements made in previous years to appraise the existing landing facilities and to make recommendations for works required to meet the present and expected needs of the fishing industry the remaining two surveys of the coasts of Co. Dublin and Co. Louth were completed in 1977.

Work continued on the implementation of the recommendations made in previous years for various counties by the Survey Teams. The ensuing improvement schemes were kept under review and brought up to date where necessary to take account of developments in the fishing activities at the various ports and landing places for which recommendations had been made.

Discussions were held with representatives of the Skerries Fishermen's Association and the Office of Public Works to consider a proposed site investigation with a view to carrying out improvement works at Skerries.

### *Marine Pollution*

Numerous applications for licences to discharge effluents to estuarine and coastal waters were considered and strict conditions for the prevention of pollution by new industrial and Local Authority discharges were imposed. The effects of existing discharges were kept under surveillance, and where damage to fisheries was found to be likely or to exist, appropriate remedial or preventive measures were taken. The Department fostered a policy of encouraging consultation with new industry and designers of sewerage schemes at the planning stages.

### *Mariculture*

Engineering advice was given to various private developers of salmonid and shellfish rearing stations. The engineers collaborated with one private developer in designing a scheme for full range breeding of rainbow trout in an enclosed sea inlet.

### *Planning*

A study of the projected investment needs for the fishing fleet and harbours was completed, and is being examined as a basis for formulating development policy.

## TECHNOLOGY

### *Fish Quality Regulations*

The Fish Quality Officers continued to supervise fish landing to ensure compliance with the Demersal Fish (Handling, Storage and



Transport) Regulations, 1967 as amended by the Demersal Fish (Handling, Storage and Transport) Regulations, 1973. Particular attention was paid to the size and freshness gradings of fish landed at Irish ports and offered for sale at auctions to ensure compliance with EEC Council Regulation No. 103/76 of January 1976 and were active in certifying fish withdrawn from the market, for which the producers organisation wished to claim compensation, that the withdrawn fish had been properly graded and properly disposed of.

#### *Fishery Products—Export Control*

The special arrangements introduced by the Department for the supervision of those premises and processors involved in the export of fishery products to France were continued and suitable certificates were issued in respect of products exported.

#### *Codex Alimentarius Committee on Fish and Fishery Products*

The Inspector and Engineer and one of the Engineers attended as delegates of Ireland at the annual meeting of the Committee on Fishery Products of the Codex Alimentarius Committee which was held in Bergen, Norway, for the preparation of international standards for various fish products.

#### *Miscellaneous*

The Killybegs Harbour Master and one of the Engineers visited a number of Scottish fishing ports during the year to study the management techniques used in the operation of these ports.

### **INTERNATIONAL AND OTHER CONFERENCES**

During the year Sea Fisheries Division was represented at the following conferences, study groups, etc:

#### *Abroad*

- (1) United Nations Third Conference on the Law of the Sea, at New York.
- (2) International Council for the exploration of the Sea, at Copenhagen.
- (3) Codex Alimentarius Committee on Fish and Fishery Products at Bergen.
- (4) Technical Working Group of the Interim Paris Commission.
- (5) Standing Advisory Committee for Scientific Advice (of the Oslo Commission), at Stockholm.
- (6) Joint Monitoring Group of the Oslo and Interim Paris Commissions, at Brussels.
- (7) Eighth Annual Meeting of the West European Fish Technologists Association at Tromsø, Norway.

*Home*

- (1) National Science Council Environmental Pollution Panel.
- (2) National Science Council Contact Group on Estuarine and Coastal Pollution.
- (3) Ad-hoc Liaison Group with the Department of Local Government (Environment) on Technical Aspects of EEC Legislation on the Control of Water Pollution.
- (4) National Science Council Seminar on the Prevention of Lake Pollution.
- (5) COST Industrial Food Technology Seminar, in Dublin.
- (6) A seminar on the problems of heavy metals organised by the Aquatic Environmental Unit.

*LEGISLATION*

Particulars of the Statutory Instruments relating to Sea Fisheries made during the year are included in Appendix No. 22.

## PART II

### INLAND FISHERIES

Details of the catches of salmon, sea trout and eels in the various fishery districts during 1977 are given in Appendices Nos. 11 to 17 to this report. As usual, the catches made in the Foyle Fisheries Commission area, formerly the Moville Fishery District, are not included but they are referred to in a separate section of this report.

In 1977 the catch of salmon and grilse amounted to 409,533 fish weighing 1305.35 metric tons and valued at £4,581,884, compared with 467,231 fish weighing 1491.82 metric tons and valued at £5,301,737, for 1976. The overall average weight at 3.19 kgs was slightly lower than in 1976. The commercial catch at 1266.85 metric tons was also lower than the 1976 figure of 1448.85 metric tons. The total rod catch amounted to 11,340 fish weighing 38.5 metric tons valued at £135,153 compared with the figures for 1976 when 12,520 fish weighing 43.02 metric tons and valued at £151,884 were caught. The total number of licences of all kinds for angling for salmon and sea trout was 11,889 compared with 14,412 in 1976. The reduction over the 1976 figure may be accounted for by increased licence duties. The salmon catch figures for nets and rods for the years 1975, 1976 and 1977 are given in Appendix No. 12. In 1977 the salmon and grilse catch (by weight) was distributed as follows:—

Drift nets	...	75%
Draft nets	...	17%
Stake nets, snap nets, weirs and other commercial methods	...	5%
Rod and Line	...	3%

Details of the catch of sea trout in 1977 in the various fishery districts are given in Appendix No. 13. Very little commercial fishing specifically for sea trout is undertaken in this country and over 50% of the total catch is taken as a by-catch of commercial fishing for salmon. It is difficult therefore to compile accurate statistics.

### BOARDS OF CONSERVATORS

Details of receipts and expenditure of boards of conservators for the fishery year ended 30 September 1977 are given in Appendix No. 18.

### RE-ORGANISATION OF INLAND FISHERIES

During the year the Government announced plans for the establishment of seven regional fishery boards, representative of all inland

fishing interests, to replace the existing boards of conservators and Inland Fisheries Trust. A central fishery board will also be established to co-ordinate the work of the regional boards.

### *EMPLOYMENT IN THE INDUSTRY*

Exclusive of persons employed on the marketing and transport of fish, a total of some 6,500 persons found either whole-time or part-time employment in inland fisheries during the year. This figure includes 4,550 persons estimated as engaged in netting for salmon, 300 employed by boards of conservators on protection of fisheries, 800 engaged in netting and protection work in the Foyle area, 155 engaged in development work on behalf of Inland Fisheries Trust Inc. and the remainder employed by proprietors of commercial and sport salmon fisheries or by angling associations.

### *INSTRUMENTS OF CAPTURE*

The numbers of the various types of licences issued in each fishery district and the rates of licence duty are given in Appendices Nos. 19 and 20.

### *EXPORTS OF FRESHWATER FISH*

#### *Salmon*

The total quantity of salmon exported in fresh, chilled, frozen and smoked forms was 1,069 metric tons compared with 1,195 metric tons in 1976. Total value of these exports fell from £4,535,500 in 1976 to £4,209,684. Details for the two years are as follows:

	1976		1977	
	metric tons	£'000	metric tons	£'000
Fresh, chilled,				
frozen salmon ...	1,138	4,266	1,012	3,763
Smoked salmon ...	57	354	57	447

Of the total quantity of fresh, chilled and frozen salmon exported in 1977, 627 metric tons went to Great Britain, 102 metric tons went to France, 73 metric tons to the Six Counties, 48 metric tons to Spain, 54 metric tons to the Netherlands, 63 metric tons to Belgium/Luxembourg and 40 metric tons to Germany.

The smoked salmon was exported mainly to Belgium/Luxembourg (13 metric tons), the Federal Republic of Germany (12 metric tons), the U.S.A. (12 metric tons) and France (6 metric tons).

The average export price of fresh, chilled, or frozen salmon was £3,718 per metric ton as compared with £3,749 per metric ton in 1976.

### *Rainbow Trout*

Exports of rainbow trout in 1977 amounted to 128 metric tons valued at £127,000 as compared with 113 metric tons valued at £162,000 in 1976.

### *Eels*

Exports of eels in 1977 amounted to 145 metric tons valued at £278,000 as compared with 87 metric tons valued at £123,000 in 1976.

## **EEL FISHING DEVELOPMENT**

As indicated in the paragraphs dealing with scientific and engineering research, work continued during the year on the investigation of eel stocks and eel fishing techniques. Advice and information on eel fishing was given to interested persons. Forty one eel fishery authorisations were issued during the year bringing the number of fishing engines operating under such authorisations to 55.

## **ARTIFICIAL PROPAGATION**

Details of salmon, sea trout and brown trout ova produced at the various hatcheries are given in Appendix No. 23.

The total output of salmon ova in the 1976/77 spawning season was 3,683,000. 273,000 ova/fry were distributed from the Department's hatchery at Glenties, Co. Donegal.

Over two million brown trout were handled at Inland Fisheries Trust Hatcheries and production for the year was two million fish consisting of ova, fry, summerlings, fingerlings, spring yearlings, autumn yearlings and adult trout. 1,600,000 of this stock were released into trout waters being developed by the Trust and 400,000 were sold to angling clubs and other fishing interests. 500,000 rainbow trout ova were handled by the Inland Fisheries Trust Hatcheries and production for the year was 316,000 consisting of ova, fingerlings, yearlings and adults. Of these 16,000 were stocked in Trust rainbow trout waters and 300,000 were sold.

## **RESEARCH AND DEVELOPMENT**

### **SALMON POPULATIONS**

#### *Salmon catches*

The total catch of 1,300 metric tonnes of salmon in 1977 represents a decline of about 13% on the 1976 figure which in turn showed a drop of over 30% on the 1975 catch. It is now clear that over-exploitation of our stocks in recent years is now causing serious depletion. There has been a substantial increase in fishing effort since 1970, but unfortunately, instead of continuing to produce more

salmon, the result has been a decrease in the catch per type of fishing gear, and this applies to all gears from drift nets to salmon rods. Increased fishing effort yielding diminished catch per unit effort is a classic example of over-exploitation. Catch per unit effort data are available for traps, weirs and other fixed engines, and also for snap nets and they show a very rapid decline since 1975.

*Type of Engine*

<i>Year</i>	<i>Fixed</i>	<i>Draft</i>	<i>Snap</i>
1975	20,748	162,687	27,106
1976	16,554	45,812	13,365
1977	8,744	73,585	9,085

In the major traditional drift net fishing areas of Donegal and North Mayo there was a marked reduction of the total catch over previous years. The catch by salmon drift nets in the Cork area was, however, the second highest recorded, whilst in the Kerry area the total catch of 16,000 salmon almost doubled that of 8,500 in 1976. This high rate of exploitation in the Cork and Kerry areas by offshore drift nets produced a corresponding reduction of catch by the inshore fishermen. Furthermore, it was responsible for poor escapement into freshwater so that the numbers available for anglers and for spawning has been critically reduced, and was especially noticeable in the case of most west Cork and Kenmare Bay rivers as well as the river Laune.

*Spring fish*

There was some indication of an increase in the run of spring salmon (2+ winters at sea) in 1977. This could have been due in some measure to the restriction of high seas fishing off the coast of Greenland, where the total allowable catch of 1,100 tonnes came into force in 1976. There is evidence from tagging experiments that a proportion of Irish 2+ sea winter (spring salmon) migrate to feed in Greenlandic waters.

*Salmon migrations*

Investigations took place into the appearance of salmon off different parts of the Irish coast and to the occurrence of the peaks of the runs. The pattern of the 1977 shoreward migration was similar to that of 1976. The majority of fish entered Donegal, Mayo and Galway coastal waters between June 21 and July 10, the peak occurring from June 11 to June 30. The run into the River Shannon was slightly earlier, from June 11 to June 30, whilst on the west Cork coast the peak occurred from July 1 to July 10. From the mouth of the Cork Blackwater to Hook Head, in Co. Wexford, the runs were somewhat later, and there was still a quantity of salmon available for capture until July 31. The River Slaney appears to be reverting to its earlier pattern whereby over 40% of the salmon entering it

were captured before the end of April. Thereafter, salmon were taken throughout the summer months extending as late as September 15. The east coast generally, is the main area of the late running salmon. For example, in the River Boyne, over 55% of the catch was taken from July 11 to August 10, whilst in the rivers flowing into Dundalk Bay, the pattern was similar. This suggests that the east coast is dependant upon a run of salmon still available after the major drift net fisheries have ceased operating.

In the Dublin area, the catch was so small that no meaningful estimate could be made of its strength or migratory pattern.

#### *Age compositions of salmon populations*

Salmon were regularly sampled at the Dublin Fish Market, to record data on size, range and age. Some 3,330 salmon were measured and weighed, and 3,000 sets of salmon scales removed for ageing. Approximately 94% of these salmon were grilse, and 4% were 2 sea-winter or spring fish. This is similar to the 1976 findings. However, the scarcity of previously spawned salmon was very noticeable. The condition factor (K) was calculated for every salmon examined, and found to have an average value of 1.10, with only a small proportion having a K of less than 1.00, so that even in this situation of reduced catches, the quality of the salmon being caught remains high.

In the market, 63% of all salmon were purchased in July and 19% in August, the seven months prior to and following this period accounting for the balance of 18%. The average weight of salmon offered for sale was 3.2 kg.

The sex ratio of salmon being gutted at market premises for smoking was recorded. The ratio resulting was 62% females to 38% males. This sampling could be slightly biased because it was confined to a period of eight weeks and therefore it is conceivable that the early and late run salmon might alter these proportions.

#### *Salmon fecundity*

Investigations of the rate of production of salmon eggs are being continued. It has been established by studies at a number of rearing stations, that the number of eggs per salmon is a function of the salmon's length rather than its weight. Furthermore, there is an apparent marked variation in the size of eggs as between salmon of different lengths.

There is clear evidence that the salmon entering rivers generally are smaller on average than they used to be and a likely cause of this is that they now consist largely of salmon which have escaped or passed through the drift nets. The consequence of this for the spawning areas is that smaller salmon can only produce fewer eggs per spawner, and therefore fewer migrating smolts will be produced over the next few years.

### *Tagging of salmon*

The adult salmon tagging programme in 1977 was carried out for a second year in Killala Bay and along the north Mayo coast to the east and west of this Bay. Released tagged salmon were recaptured at places ranging from the River Shannon to the River Itchen on the south coast of England. Despite this wide range of recapture points, 42.5% of the tags were recovered at places between Tullaghan Bay, Co. Mayo and Inver Bay, Co. Donegal. The River Moy accounted for 19% and the River Easkey for 18.5% of the recaptures. In general, salmon tagged on the west side of Killala Bay appeared to be in transit, being recovered at greater distances from the tagging area than those tagged on the east side, which were mainly recaptured in Killala Bay itself and in Sligo and Donegal Bays. Most of the tagged salmon were at liberty only for short periods. For example, in the 10 days following the releases, 21% of the tags were returned and after 20 days, 88% of all tags had been recovered. The recapture rate of 20% of all liberated salmon was satisfactory and was the highest recorded from drift net tagging to date (with the exception of Ardmore Bay, Co. Waterford in the early sixties, when an unusually high rate of recapture of 50% was recorded).

In 1977 an experiment was carried out using acoustic or tracking tags. This was a highly successful experiment and eight salmon were tagged and their subsequent movements tracked and recorded. The purpose of this form of tagging is to obtain precise information about the movements of salmon in bays, estuaries and rivers, which is of particular importance in the case of the River Moy.

There was only one record of a salmon recaptured on the Irish coast in 1977 bearing a foreign tag. This particular salmon was caught in a drift net off the north Kerry coast. It was difficult to establish the exact place where the salmon had been tagged, but it was somewhere in the vicinity of Faroe Islands. One other salmon which had been tagged in Sweden was recorded in 1977. However, it was located in a consignment of salmon which had been exported from the Donegal coast in 1976, and it was not discovered until 1977 when the salmon were being processed. Outside Irish waters, two tags were recovered from Greenland, on salmon which had been tagged as smolts on the River Shannon in 1975. Unfortunately, the discovery was made in 1976, but details were not received about them until 1977.

### *Contribution of hatchery reared fish to the drift net fishery*

Approximately 450,000 smolts are released annually from four rearing stations situated on the Rivers Lee, Shannon, Burrishoole and Bush (in Northern Ireland). The adipose fin of these smolts are amputated prior to release. This fin does not regenerate and is, therefore, a useful marker or tag whereby to distinguish wild from reared smolts.

During 1977, an investigation of the percentage occurrence of



reared smolts captured as adults was undertaken at a number of landing places around the Irish coast, with specific reference to drift net caught salmon. The results were interesting and important. For example, in one sampling day, of salmon which had been caught in drift nets off the Aran Islands, 4% were found to have originated from reared stock. In a more general way, and in the area extending from the coast of Donegal to the River Lee in Cork approximately 2% of the salmon were found to be of reared origin, accounting for about 6,000 salmon. This survey was carried out only over a 4 week period and was limited in extent, but it did give an indication of the degree to which hatchery reared smolts contribute to the drift net fishery for adult salmon. Further surveys are necessary to arrive at a more accurate evaluation of the contribution of hatchery reared stock to whole salmon fishery.

#### *Juvenile salmon surveys*

In the River Boyne system, 25 population estimates were made, covering the most important tributaries of that river. The purpose of these surveys is to determine the present status of salmon populations prior to and after the tributaries have been dredged. The recovery rate of salmon numbers in the dredged tributaries gives cause for concern. Despite efforts at restocking these tributaries with under yearlings, indications are that their survival rate to the yearling stage has been poor. Only those tributaries of the River Boyne which have not been dredged are contributing significantly to smolt recruitment. This poor recruitment is reflected in the sharp decline in the run of adult salmon into the River Boyne. The trout stocks, on the other hand, have shown a remarkable rate of recovery, suggesting that post drainage conditions can be more suited to them than to salmon.

A survey of the juvenile salmon stocks of the River Carrowniskey, in Co. Mayo, was undertaken, to determine the present level of recruitment. Reports had indicated that there had been virtually no escapement of spawning salmon into the Carrowniskey in 1975 and 1976. The density of juvenile salmon of all ages was found to vary from 0.29 to 0.60 per square metre. The upper limit of 0.60 per  $m^2$  is normal for this type of river and therefore the lower densities have been caused by a shortage of food during the post drainage period. In the case of the Carrowniskey, brown trout were also found to be very scarce, the population varying from 0.07 to 0.25 per  $m^2$ . The extreme scarcity of food supply is considered to be the main factor limiting the recovery of brown trout also, in this system.

A survey of the River Dee, Co. Louth, was carried out to determine whether restocking with fingerling salmon is necessary for the rehabilitation of the present stock of salmon, which is reported to be low. The survey indicated that at a density of 0.09 per  $m^2$  it is one of the lowest recorded populations of salmonids investigated to date. Similar low densities were recorded from surveys of rivers flowing into Bantry Bay, Co. Cork, where the figures fell as low as 0.4 salmon per  $m^2$  in the worst affected regions.

### *Ulcerative Dermal Necrosis (UDN)*

The outbreak of UDN Disease first made its appearance in salmon in 1964, and it is still present in most rivers in the country, with a few notable exceptions. UDN was not recorded in 1976 in rivers flowing into the north east coast of Donegal, but it reappeared there in 1977, in the River Lennon in the Spring and in the River Crana during the summer grilse run. In the case of the River Lennon the recorded observations of diseased salmon were 31, but this must be assumed to be a minimal figure. The River Erne, in the Donegal section of its flow, was badly affected, a total of 112 diseased and dead salmon being recorded from the fish pass at Cathleen Falls, out of a total of 800 salmon which passed through the fish counter, on their way to the spawning grounds.

Along the south coast, the River Lee and River Blackwater contained large numbers of diseased salmon in the spring time and again during the spawning period. Fortunately, the River Bandon was affected to a lesser degree.

The River Cumeragh in Kerry, where UDN was first observed in 1964 was badly affected, and local reports stated that its severity was similar to that of earlier years.

UDN disease reappeared, after a few years absence, in the River Slaney, but its incidence was light.

A total of 859 diseased salmon were reported for the whole country, which represents about 0.2% of the total catch, but this is regarded as a minimal figure. Reporting of accurate observations of diseased fish, after a period of 14 years, has fallen off and it is only in the case of a few rivers that reports are reliable.

### *SEA TROUT*

Investigations of the age composition of sea trout from the Lackagh estuary, Co. Donegal, and the net fisheries along the east coast were undertaken in 1977. A study of the parasitic fauna of sea-trout was carried out also. Tagging of sea-trout, mostly finnock, was undertaken in the River Moy and in the Screebe system in Connemara. Sea trout kelts were tagged. Information was obtained on the movement of sea-trout through the fish counter in the Dungloe lakes in Donegal. Some experimental stocking was undertaken with sea trout eggs in the head waters of the River Lackagh and in the Cloonee lakes in Co. Kerry.

### *RAINBOW TROUT INVESTIGATIONS*

#### *Farmed Production*

The overall production from the 7 commercial rainbow trout farms operating in 1977 was 206.4 tonnes, representing an increase of 46.4 tonnes over the 1976 production. The limiting factor in the develop-

ment of rainbow trout farming has been due to the exceptionally dry summers of 1975 to 1977, which necessitated reduced stocking densities. Two new farming units were commissioned in 1977, and these will have a production potential for a further 60 tonnes of rainbow trout. Three other farming units were at an advanced stage of development by the end of 1977. In addition to the freshwater farming units, five small pilot scale sea cage farming units were stocked during 1977 and satisfactory progress has been reported by the operators.

#### *Disease and nutrition studies*

Experimental work aimed at developing new strains of disease free brood stock is being continued at the Department's rearing station at Glenties, Co. Donegal. The specific pathogen free stock imported from the Isle of Man in 1976 was further culled, yielding approximately 250 selected and disease free rainbow trout which will act as the nucleus of the future brood stock.

During July and August, a student bursar was employed at Glenties to monitor the water quality throughout the production system. Temperature and dissolved oxygen were found to be critical over short periods. Food conversion rates, using proprietary brand pellets ranged from 0.9 to 1.5 : 1. At the end of 7 months the size reached by the experimental progeny had reached 26/16, top grade which is comparable to the top grade fingerlings class.

Ova were imported from Norway at the end of May 1977, but due to delays in transit and ambient temperatures at the time (18.5°C) mortality was high (80%). The survivors, however, did well, with total losses at 8.3% from swim-up to the end of September. While Spot Disease, caused by the parasite *Ichtyopterus* sp., during a period of high temperature (25°C) and low water flow, was responsible for the major losses. Treatment with malachite green and formelin was successful in controlling this disease.

#### *Freshwater cage farming*

An experiment to rear rainbow trout in a freshwater lake using a 50 m floating net cage was commenced at the end of September 1977. A number of problems associated with moorings were successfully overcome. Weather conditions created difficulties and affected the operation of the automatic feeder servicing the cage. Valuable practical information was gathered which will assist the Department's Advisory Services.

#### *Seminar*

A highly successful three day seminar on salmonid fish farming was organised by the Department and held in Limerick in September 1977. In all, 140 participants attended the seminar from all over Ireland and from abroad.

### LAKE BROWN TROUT SURVEYS

A survey of three lakes on Gorumna Island, Connemara, was carried out in the Autumn of 1977. Gill nets with mesh sizes of  $\frac{1}{2}$ ", 1", 2" and 3" were used. Faunal samples as well as water analysis were collected also from each lake, Loughs Awallia and Hibbert contained the typical type of brown trout associated with oligotrophic lakes. There is a large population of slow growing brown trout in these two lakes. Good spawning facilities give rise to overpopulation, and this coupled with the natural scarcity of food in both lakes cause feeding competition which leads to poor growth rates. Ballynakill lough, on the other hand, has a small population of good sized (220g to 1200g) brown trout with an average weight of 700g. The small population and good growth is related to the lack of spawning facilities which result in low recruitment rates, and this in turn enables the brown trout to make the best use of the small quantity of available food material.

### EEL RESEARCH AND DEVELOPMENT

Under the Department's studentship scheme a post graduate student was appointed to study the eel population of the Burrishoole River system. Age analysis was carried out on the silver eel migration, using standard ageing techniques, and also scanning electron microscopy (SEM) was used for a limited number of otoliths (ear-stones).

The usual problems regarding the sexing of yellow eels were encountered. Consideration was given to the influence of the environment on the growth which in turn influences the sexuality of the eels. A study was initiated to determine cytological differences which might exist between the sexes. Chromosome spreads were photographed with the Nikon camera adaptor. By the time of the close of this study, a clear chromosome spread had not appeared, but with further research it is hoped that this technique may be used successfully for sex differentiation in eels (and possibly other species).

The studentship was terminated in May 1977 when the holder resigned to take up another appointment.

Having concluded an extensive study of eel populations in freshwater, investigations were commenced on the resident eel populations of a selected number of estuaries. Eels have been fished in the estuary of the River Slaney and the South Sloblands near Wexford, for a considerable time. The 1977 investigations extended previous work by experimental fishing in the upper reaches of the Slaney estuary near Ferrycarrig Bridge. Similar experiments were carried out in the estuaries of the River Boyne and River Laune, Co. Kerry, using conventional trains of fyke nets. There is a population of eels in the inner Slaney estuary which will yield a good quantity of catch. The range of these eels was from 35g to 780g with an average weight of 244g. The catch per unit of effort was 4.8, which is similar to the most productive freshwaters investigated to date.

The Boyne estuary, which hitherto has not been fished commercially, also contains an exploitable population of eels. This size range is from 44g to 500g, with an average at 180g.

The Laune estuary, on the other hand, yield very poor quantities of exploitable eels.

Some concern has been expressed that fyke net fishing in estuaries could be detrimental to migrating salmonids. The by-catch was examined in all of the above experiments and found to consist of flounders, dabs, sole, with a few bass and mullet, but not a single salmonid was observed. Therefore it can be said with certainty that in the estuaries so far studied, fyke netting for eels will not damage salmonid fisheries.

## ENVIRONMENTAL STUDIES

### *Heavy metals*

Investigations are continuing of the present level of heavy metals in fish and their food, particularly in the case of the River Blackwater, a tributary of the River Boyne. The organs being examined and analysed are muscle, reproductive systems, liver and brain tissue of salmonids, with emphasis upon differentiation of levels by age groups.

### *Pesticides*

Research continues on the design of suitable media for the degradation of Lindane, a highly toxic organochlorine present in most sheep dips used in Ireland. Indications are that the most successful medium is peat moss which has resulted in the removal of 90% of the toxicity from the sheep dip.

### *Water abstractions and arterial drainage*

Investigations are continuing on the effects of water regulation on resident salmonid stocks. Biological surveys have been carried out in a number of proposed abstraction and compoundment sites, and recommendations have been made which should result in the minimum disruption of fish stocks.

The long term investigation of the effects of arterial drainage on fish stocks in the River Boyne system is continuing and preliminary investigations were carried out at the River Maigue, Co. Limerick, drainage scheme.

## STUDENTSHIPS AND GRANT-AIDED RESEARCH PROJECTS

### *Bursaryships*

For eight week periods during the summer months of 1977, 5 undergraduate students were recruited from universities and regional col-

leges to assist the biological staff in their investigations. Two students were engaged in the juvenile salmon survey of the River Boyne, two carried out the sampling programme on the commercial catch of salmon in the Dublin fish market and one student carried out the routine work on water quality monitoring and feeding trials with rainbow trout at Glenties rearing station.

### *Studentships*

Under the studentship scheme there were seven projects on various aspects related to fisheries research being financed by the Department. The studies are:—

- (1) The effects of mining wastes on the fish fauna and flora of the Kilmastulla River—which receives the effluent from silver mines; tenable at University College, Dublin.
- (2) A study to predict the sustainable yield for the Lough Neagh Pollan fishery; tenable at the New University of Ulster.
- (3) A project to construct a mathematical model describing the elver and eel populations in Lough Feagh, Co. Mayo was held by a student who resigned in May to take up a permanent post. The studentship was tenable at Trinity College, Dublin.
- (4) Investigations into the effects of eutrophication on the fish populations of the Killarney valley lakes was tenable at University College, Dublin.
- (5) The ecology of the tropholytic benthos of Lough Derravaragh, Co. Westmeath was tenable at University College, Dublin.
- (6) An investigation into the physico-chemical and biological effects on water receiving aluminium sulphate, a flocculating agent used in the treatment of water for potable supply was tenable at University College, Dublin.
- (7) A study of the fish population of Lough Bawn was tenable at Trinity College, Dublin.

### *SALMON RESEARCH TRUST*

Census work on wild fish populations was continued at the Salmon Research Trust, Newport, Co. Mayo. The count of 2+ sea winter fish fell slightly in 1977. The 1+ sea winter fish were poor, the overall total being only 53% of the 5-year average. Furthermore, the 1+ sea winter fish were noticeably smaller than in previous years.

Salmon smolt production in 1977 (which will give rise to the run of 1978) was poor and can be attributed to a low spawning escapement in 1974 and to the effects of summer drought in 1976.

The return of 1+ sea winter fish from reared smolts was the lowest recorded for over twelve years. It is probable that part of the cause was latent infection causing mortality in early sea life. Furunculosis

was present and a kidney condition resembling proliferative kidney disease was noted. The 2+ smolts showed a lower survival rate than the 1+ smolts and the average size of fish returning was noticeably smaller. In 1977 the number of 2+ smolts release was lower than usual due to furunculosis mortality. Their average size was 16.4cm whereas that of the 1+ smolts was 15.2 cm. The 1+ smolts comprised 51% of the yearling population and overall survival during the first year of life was 53%. Survival from ova to underyearling in 1977 was 66%.

Investigations into the exploitation rate for rod fishing was similar to previous years although there was a marked decline in the numbers available for exploitation due to decreased stocks.

The upstream run of sea-trout also showed a marked decline. The total counted was 2,212 which is only two-thirds of that of the previous years. The decline is attributed to a poor survival of the upstream run to the kelt stage in 1976 and to a lower sea-trout smolt production in 1977 due to summer drought in 1976.

### ADVISORY WORK

The Department's biologists continue to advise the boards of conservators, the local authorities and other statutory bodies on biological matters relating to fisheries. Representatives are attached to a number of advisory committees of the National Board of Science and Technology, the Foras Forbartha Water Resources Division and local authority committees on the control of pollution and water regulation committees.

The Department's biologists have attended EEC meetings as experts on fish diseases, various aspects of pollution control, and the usage of thermal discharges for improving fish stocks and fish farming.

### ENGINEERING

#### *Eel Fishery Development*

Existing eel fishery installations were investigated and, where necessary, owners were advised on improvements. Also, new site applications for authorisations were investigated.

An eel trap was designed by the Department's engineers for the Drogheda Board of Conservators and was constructed on the site of a former eel trap on the Murmod River at the Board's salmon rearing station at Virginia, Co. Cavan.

Two experiments in capturing migrating silver eels were carried out on the Munster Blackwater. The first involved using a large fyke net with long wings or leaders' hung from a suspension cable. Fishing had to be abandoned because of damage to the net caused by debris

and water drag. In the second experiment a modified stave-net with otter board was used. Good deployment and reasonable control of the net was achieved. Modifications of design will be carried out during the summer and experimental fishing will be resumed next winter.

### *River Improvement Schemes*

There were discussions with Dundalk salmon anglers and Bord Failte about improvements to be carried out with the assistance of Bord Failte on the River Fane. Improvement works were carried out on the fish-pass at Curry dam, Co. Sligo, in the Ballina Fishery District. Observations carried out during the spawning run suggest that the improvement works were a success.

The Carrowkeel Falls and the Clydagh Falls on the River Clydagh, Ballina Fishery District were surveyed. A fish-pass design for each was drawn up.

Members of the engineering staff participated in the workings of the I.C.E.S./E.I.F.A.C. Working Group on Eel Stocks held at Charlottenlund, Copenhagen in August 1977. Members of the engineering staff also participated in the workings of the following bodies:— N.S.C. Seminar on Lake Pollution Prevention by Eutrophication Control, Co. Donegal Committee on the Control of Water Pollution.

### *Electricity Generating Stations*

The Department continued to monitor the effect on fisheries of the various power stations operated by the E.S.B. Among the problems dealt with were the effects of thermal discharges, the prevention of entry of adult and juvenile fish into water intakes and the well-being of fish stocks in rivers used for hydro-electric generation.

### *Investigation of Inland Fish Movement*

The salmon counting installation and associated fish passage facility on the River Feale near Finuge Bridge were kept under observation by the Department's engineers. It was found that the groynes were functioning very efficiently in assisting upstream passage of salmon but there was some evidence that conditions for passage of fish through the 12' wide gap in the ponding weir were unsatisfactory under certain conditions of flow. A recommendation that this gap be fitted with a Denil pass as originally advised by this Department has been favourably received by the county council. Due to circumstances beyond this Department's control it was not possible to put the smolt trap at the sluice-barrage at Galway into operation. As a result, it is unfortunate that there is no record of the numbers of salmon smolts migrating downstream in the River Corrib for 1977. However, it is to be noted that, in 1974, 1975 and 1976, 75,100, 51,050, and 40,100 smolts respectively were trapped and released.

The Galway smolt trap will be fully operational in 1977 by which



time transitional difficulties relating to the emplacement of the smolt diversion screens will have been ironed out.

The fish-counting and trapping installations at the "leap", Furnace, Co. Mayo, which were designed by this Department for the Salmon Research Trust continued to operate successfully.

### *Electronic Fish Counters*

Existing counters at the sites listed below were maintained. The records are summarised as follows:

River	Location	Total Count	Daily Max.	Date
Bandon	Bandon Weir	1,263	75	26 August
Blackwater <sup>1</sup>	Clondulane Weir	2,689	109	21 November
Boyne <sup>2</sup>	Blackcastle Weir	518	71	6 May
Corrib	Galway barrage	18,452	949	19 June
Inagh <sup>3</sup>	Ennistymon pass	18		
Lee <sup>4</sup>	Cork W'Works Weir	468	23	12 October
Lennon	Ramelton Weir	300	9	16 June
Liffey	Islandbridge Weir	735	25	2 August

(1) The counter was out of order 25 September to 9 November (storm damage).

(2) Visual count only was taken during trapping season October-December.

(3) No count was taken during period of main run (Oct.-Nov.) because of malicious damage.

(4) The counter was out of order 15 May to 19 August due to malicious damage.

The counting of salmon on the Bunree River was abandoned on completion of a research programme which established that only very late-run spawners frequent this river. No records are given for counts at Finuge ponding weir because of operational difficulties in validating counts. There was reason to believe that some fish were dropping back after being counted and that some fish ascending near the surface during high flows were not being registered. It is hoped to overcome these problems by getting the county council to instal a Denil pass fitted with a standard counting tube. A site for a salmon counter on the River Finn was chosen by the Department's engineers for the Foyle Fisheries Commission.

River trials of the prototype electric counter Delta-Vee ( $\Delta V$ ) were carried out in two sites. Further technical problems were

encountered and further research and development work is in hands. The Department continued its participation in the UK-based Fish Counters Liaison Group.

### *Application of Electricity to Inland Fisheries*

Research and development work on application of electricity to inland fisheries was continued by the Department's consultant at the field laboratory at the State salmon hatchery at Glenties, Co. Donegal, in association with the Department's engineers.

Reference has already been made under the appropriate headings to works undertaken or investigations carried out in this field during the year.

### *Control of Discharge of Effluents*

Proposals for the treatment and discharge of effluents from the existing and projected undertakings sponsored by industrialists and local authorities into rivers, estuaries and the sea were examined and advice was supplied on measures to prevent damage to sea and inland fisheries. The number of cases dealt with during the year reached a very high level reflecting the increasing interest and concern about such matters.

A number of problems caused by existing discharges were investigated, mainly on the Rivers Suir, Feale and Shannon. Advice was given on control and remedial measures. The Department continued discussions with the Department of the Environment on the implementation of the Local Government (Water Pollution) Act, to ensure that full cognisance is taken of the fishery interest. An administrative arrangement has been made for consultation of this Department by the local authorities in drawing up the terms of licences to discharge effluents.

### *Arterial Drainage*

Close contact was maintained between the officers of this Department and the engineers of the Office of Public Works to ensure that the post-drainage maintenance works on the Corrib, Mask and Moy drainage schemes were implemented in such a manner as would minimise the dangers to fish life in the various rivers resulting from the execution of these drainage schemes.

Pre-drainage conditions in the Mask/Carra catchment on which work will be carried out in the near future continued to be monitored. The possible impact of the execution of the scheme on the water supply to Cong salmon hatchery and rearing station and the proposed smolt rearing extension was the subject of investigation.

Agreement was reached between Department of Fisheries and OPW on the necessary brown trout restocking programme and rehab-

ilitation works' programme for the Mask/Carra catchment in the event that the catchment undergoes arterial drainage.

The fish-passes designed by the Department of Fisheries in 1976 for incorporation into the new weirs on the River Maigue were constructed by O.P.W. These included the provision in one case of an electronic fish-counter unit together with an electrical fish-blocker unit. Excluding the laying-on of power, work on the counter and blocker unit was completed.

Detailed pre-drainage survey work of the Camogue River sub-catchment in the Maigue catchment drainage scheme was started in 1977.

Surveys of fisheries interests relating to the drawing up of the cost benefit analyses for the Bonet Catchment Drainage Scheme, Co. Leitrim and the Boyle-Lung Catchment Drainage Scheme, Co. Roscommon were started in 1977.

An investigation of the impact on the fishery interests by the proposed diversion of the River Blackwater from its present channel to facilitate mining development at Navan was concluded and measures were drawn up to safeguard the fishery interests when the diversion is carried out.

#### *Fish-Culture Installations*

The salmon hatchery and rearing station at Cong continued to operate successfully under the Galway Board of Conservators. The water-supply position continued to be trouble free as a result of the remedial works carried out on the weir in 1975. Agreement, in favour of operations at Cong Salmon Hatchery, was reached with Ashford Castle Hotel regarding the operation of the turbine at the mill pond, Cong, which is the water-supply source for the hatchery.

A programme of maintenance and improvement works including a small office for the manager, was drawn up for the Cong installations.

Bangor Board of Conservators continued to be assisted in the operation of the Glencullen salmon trapping and ova incubation station.

The Salmon Research Trust of Ireland Inc. continued to be provided with fishery engineering advice by the Department of Fisheries. In this regard, an elver trap was designed and its construction supervised by this Department's engineers.

#### *Rainbow Trout Farming*

Interest in commercial rainbow trout fish farming continued to mount during the year 1977. In the previous year fish-farming projects

became eligible for grants under the Farm Modernisation Scheme operated by the Department of Agriculture. An assistant engineer was provided to cater for enquiries for assistance and advice on the establishment of fish farms for the production of rainbow trout for human consumption. Many proposals were investigated, sites assessed and the applicants advised on their suitability. Engineering outline designs were prepared and supplied where necessary.

Twelve possible sites were inspected. Six outline plans were drawn up. A general survey for possible sites was carried out in the Slaney, Barrow, and Nore catchments.

The Department's engineers contributed a paper to the seminar on commercial fish-farming in Ireland which was held in Limerick in September, 1977.

### *Water Abstraction*

Major water abstraction schemes continued to pose problems to inland fisheries conservation and in management. The Department's engineers continued to advise local authorities and private firms of provisions to be made in the design and operation of water abstraction schemes to prevent damage to fisheries. During the year it was again found necessary to pay particular attention to investigation of measures that could be implemented to prevent the possibility of damage to fish stocks by the discharge of waste waters from water treatment works.

Two proposals in particular from Galway Co. Council to abstract water from Owenboliska Lough and Lough Glennemurrin for the Spiddal and Costelloe regional water supply schemes respectively were further examined and fish passes for both proposed impounding dams were designed by this Department and supplied to the Galway County Council's consulting engineers. Similar problems relating to the proposed abstraction of water from Carrowmore Lake for the North West Mayo regional supply were also studied and in this case also a suitable fish pass for the proposed impounding dam was designed by this Department. Problems relating to the proposed abstraction from Lough Conn were also studied.

Proposals to abstract water from the River Lennon at Ramelton, the River Lee dams, and the River Feale were investigated and continue under study.

### **FOYLE FISHERIES COMMISSION**

The Commission is comprised of a senior and a junior member appointed by the Minister for Fisheries and a senior and a junior member appointed by the Department of Agriculture for Northern Ireland. The post of Chairman rotates each year between the senior members. During the year under review it was held by the Belfast senior member.

The Annual Report of the Commission for 1977 gives detailed information on the Commission's activities during that year.

The spawning count of 1,800 for 1977 represents a decrease on the figure of 3,058 for 1976.

The catch of salmon and grilse by commercial engines in 1977 was 39,258 as compared to 38,931 in 1976, but the total weight of catch in lbs was down from 304,861 to 286,074 lbs. The rod catch of salmon, grilse and sea trout was 7,100 (salmon and grilse 886), compared to a total of 5,386 (salmon and grilse 663) for 1976.

The net profit arising out of the operation of the Commission's private fishery amounted to £22,850 (£14,256 in 1976), which sum is credited to the Commission's Accumulated Revenue Account.

Contributions of £79,392 were received by the Commission in equal shares from the Exchequers in Dublin and Belfast during the year ended 30 September 1977. These contributions equalled the deficit in the Commission's Accumulated Revenue Account at 30 September 1976. The deficit which accrued in respect of the year ended 30 September 1977 amounted to £60,394.

The Accounts of the Commission for the year ended 30 September 1977 and particulars of regulations made by it during 1977 are included as appendices to its 1977 Annual Report.

## INLAND FISHERIES TRUST INCORPORATED

The Council of the Trust consists of seven members, three being elected and four being nominated by the Minister. In 1977 the nominated members from the Department's staff were the Inspector and Engineer, who is the present Chairman of the Council, and an Assistant Principal Officer. The annual report of the Trust for 1977 gives a review of its work during the year. The grant-in-aid paid to the Trust by the Department in the calendar year 1977 amounted to £606,000.

Work continued during the year on the development, improvement and maintenance of trout fisheries on rivers and lakes. 1,600,000 brown trout consisting of ova, fry, fingerlings, yearlings and adults were released into waters to supplement natural spawning. Further work was carried out on spawning and nursery grounds to improve natural spawning. In controlling predators over 20 tons of pike and 35 tons of perch were removed from trout lakes and rivers. Surveys were made of new waters to assess their suitability for development as trout or coarse fisheries. Some additional facilities were provided for coarse anglers to meet increased demand. All the facilities provided by the Trust for coarse anglers in recent years were repaired and maintained in 1977.

The Trust carried out shore-angling surveys in Clifden, Co. Galway.

the Ring of Kerry and West Cork areas and new sea angling handout maps of these areas were made available. The Trust also assisted Bord Failte and others in producing sea-angling films.

The Trust continued to identify and remedy the causes of pollution in waters under its control with the co-operation of the Boards of Conservators, officers of the Agricultural Advisory Service and local authorities. The Trust reported continued co-operation from farmers and industrialists in pollution control.

#### THE SALMON RESEARCH TRUST OF IRELAND INCORPORATED

The Committee of Management of the Trust consists of seven members, two of whom are nominated by the Minister, three being nominated by the Chairman of Arthur Guinness, Son and Co. Ltd., plus two elected members. The members nominated by the Minister in 1977 were a Deputy Secretary and an Inspector from this Department.

The Annual Report of the Trust for 1977 gives a detailed account of its work during the year. The grant-in-aid paid to the Trust by the Department in the 1977 financial year amounted to £10,300.

The run of salmon fell slightly in 1977 according to the results of census work carried out by the Trust at their Burrishoole Fishery, Co. Mayo. In May and June during periods of low water levels and high water temperatures U.D.N. infection was observed. Subsequently only late running fish are thought to have survived.

The grilse run was poor in 1977. The grilse were noticeably smaller and the main run was later than in previous years. The grilse run was only 53% of the five year average for 1970 to 1974. Net-marks were recorded in July (24%). The low level of returning grilse was attributed by the Trust to mortality at sea as the freshwater smolt production which gave rise to the 1977 grilse run was normal.

A combination of low spawning escapement in 1974 and the summer drought in 1976 led to poor salmon smolt production in 1977. U.D.N. infection among kelts showed a further decline.

The return of grilse from reared smolts was the lowest recorded since 1965. According to the Trust latent infection causing mortality in early sea life was partly to blame for the poor return. The survival of 2+ smolts was found to be worse than that of 1+ smolts. As in the case of wild grilse the size of returning fish was noticeably smaller. The Trust again observed in 1977, homing to the parent river of post smolts which escaped from sea cages.

Fewer 2+ smolts, 5,850, were released in 1977 due to furunculosis mortality in the summer of 1976.

Survival rates of 80% for 2+ smolts and 57% for 1+ smolts were recorded in 1977 for smolts reared in salt water. About 2½ tonnes of cage-reared salmon and 1 tonne of cage-reared rainbow trout were marketed in 1977.

A single cell-protein diet was fed to over 4,500 yearling salmon for three months, instead of the normal fishmeal content. Normal growth and survival was recorded during the experiment.

The upstream run of sea trout in 1977 also showed a marked decline, the total of 2,212 being only two thirds of the two preceding years. A contributing factor is thought to have been the summer drought of 1976.

## MANAGEMENT OF STATE FISHERIES

In 1977, 131 State owned fisheries—in the main vested in Land Commission—were managed by Fisheries Division. Rents received during the year amounted to £4,395 compared with £4,148 in 1976.

Nineteen of these fisheries which fell due for re-letting were advertised during the year.

## INTERNATIONAL AND OTHER CONFERENCES

During the year Inland Fisheries Division personnel attended the following conferences, study groups etc.:

### *Abroad*

- (1) International Council for the Exploration of the Sea. Reykjavik.
- (2) F.A.O./O.I.E. group on communicable fish disease, Paris.
- (3) Study tour of English and Scottish fish farms.
- (4) Institute of Fisheries Management seminar on water weeds.
- (5) Institute of Fisheries Management study course, York.
- (6) I.C.E.S./E.I.F.A.C. working group on Eel stocks, Copenhagen.
- (7) Fish Counters Liaison Group.

### *Home*

- (1) Freshwater Research Group, Newport, Co. Mayo.
- (2) Technical Project Committee of the Kerry County Council.
- (3) N.S.C. Seminar on lake pollution prevention by eutrophication control.
- (4) Pollution Control Committee of Donegal County Council.
- (5) Water Resources Advisory Committee of An Foras Forbartha.

- (6) River Erne Joint Protection Committee.
- (7) Committee of Management of the Salmon Research Trust.
- (8) Irish Specimen Fish Committee.
- (9) Mariculture sub-committee of the Marine Science Association.
- (10) Water Pollution Advisory Council.

# LEGISLATION

Particulars of the Statutory Instruments relating to Inland Fisheries made during the year are included in Appendix No. 22.

**BRIAN LENIHAN,**

Minister for Fisheries and Forestry.

30 November, 1978.



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## APPENDIX No. 1

Quantity and Value of Sea Fish (excluding Salmon) returned as landed, 1976 and 1977.

SPECIES	Quantity		Value	
	1977	1976	1977	1976
<b>DEMERSAL</b>	Metric tons	Metric tons	£'000	£'000
Flat Fish				
Brill	114	125	78	65
Dabs	253	278	45	40
Megrim	160	210	37	31
Plaice	1,596	1,700	730	618
Soles	207	268	358	398
Turbot	147	168	168	134
Other Flat Fish	358	684	82	59
<b>Round Fish</b>				
Cod	4,280	5,563	1,606	1,347
Haddock	705	1,325	231	249
Hake	125	184	57	53
Saithe	1,109	1,445	283	205
Whiting	7,746	9,166	1,590	1,003
Other Round Fish	687	1,032	77	70
Ray/Skate	1,400	1,663	367	380
<b>TOTAL DEMERSAL</b>	<b>18,887</b>	<b>23,811</b>	<b>5,709</b>	<b>4,652</b>
<b>PELAGIC</b>				
Herring	23,129	22,012	6,033	3,133
Sprats	6,055	8,576	199	218
Mackerel	22,695	14,394	1,747	877
<b>TOTAL PELAGIC</b>	<b>51,879</b>	<b>44,982</b>	<b>7,979</b>	<b>4,228</b>
<b>TOTAL WET FISH</b>	<b>70,766</b>	<b>68,793</b>	<b>13,688</b>	<b>8,880</b>
<b>CRUSTACEANS</b>				
Crabs	997	1,105	160	155
Crawfish	95	84	434	379
Dublin Bay Prawns	2,804	1,852	1,059	587
lobsters	338	370	1,409	1,350
Palaemonid Shrimp	68	55	100	71
<b>TOTAL CRUSTACEANS</b>	<b>4,302</b>	<b>3,466</b>	<b>3,162</b>	<b>2,542</b>
<b>MOLLUSCS</b>				
Escallops	346	367	168	128
Queen Escallops	12	11	2	1
Mussels	3,486	3,970	103	94
Oysters	924	885	779	612
Periwinkles	2,190	2,568	437	367
Palourdes	42	190	67	105
Other Molluscs	250	61	217	37
<b>TOTAL MOLLUSCS</b>	<b>7,250</b>	<b>8,052</b>	<b>1,773</b>	<b>1,344</b>
Sea-Urchins	170	352	66	98
<b>TOTAL ALL FISH</b>	<b>82,488</b>	<b>80,663</b>	<b>18,689</b>	<b>12,864</b>

In addition to the above landings into the Republic, 5,510 metric tons of fish and 339 metric tons of shellfish valued at £1,845,000 and £243,000 respectively were landed, directly into foreign ports or transhipped at sea for export, by Irish registered vessels during 1977.

# APPENDIX No. 2

Comparison of the Average Price per metric ton of various kinds of Sea Fish for the years 1970-1977.

Species	1970	1971	1972	1973	1974	1975	1976	1977
	£	£	£	£	£	£	£	£
Sole	509	529	624	931	1,006	1,200	1,485	1,732
Brill	221	240	277	354	411	477	515	680
Turbot	211	228	275	358	444	510	799	1,145
Plaice	184	184	192	217	247	276	364	457
Dabs	69	71	68	93	81	114	143	176
Megrims	77	66	62	95	94	114	149	230
Ray/Skate	111	121	138	161	191	200	228	262
Cod	97	98	116	139	176	173	242	375
Haddock	74	53	63	96	111	181	188	327
Hake	126	130	125	141	150	176	288	456
Whiting	50	40	49	68	70	90	109	205
Saithe	53	61	64	82	97	118	142	255
Herrings	28	37	44	72	100	112	142	261
Pilchards	—	—	11	36	23	42	—	—
Mackerel	38	38	32	46	43	44	61	77
Sprats	12	11	11	17	19	17	25	33

N.B.—“Average price” as shown in this table represents total value divided by total weight for each kind of fish, year by year. It does not purport to take direct cognizance of any abnormal rise or fall in price attributable to a seasonal glut or shortage of a particular kind of fish.

# APPENDIX No. 3

Value of Landings of Sea Fish (excluding Salmon) at ports at which the value of such landings exceeded £150,000 in 1977.

PORT	TOTAL		DEMERSAI		PELAGIC		SHELLFISH	
	£000	M.Tons	£000	M.Tons	£000	M.Tons	£000	M.Tons
1. Killybegs	4,240	24,142	1,058	3,937	3,143	20,185	39	20
2. Howth	1,586	6,375	1,176	4,603	324	1,585	86	187
3. Castletownbere	1,477	9,308	261	679	1,092	8,383	124	246
4. Galway	1,003	3,902	332	888	627	2,863	44	151
5. Fenit	832	1,778	1	3	231	1,082	600	693
6. Clogherhead	779	2,399	234	837	14	85	531	1,477
7. Burtonport	672	3,639	175	491	413	3,128	84	20
8. Skerries	645	2,192	400	1,553	11	75	234	564
9. Greencastle	484	1,342	449	1,260	2	13	33	69
10. Dingle	483	2,152	141	324	304	1,810	38	18
11. Dunmore East	472	2,000	212	647	214	1,300	46	53
12. Valentia	421	1,568	124	287	149	1,208	148	73
13. Kilmore Quay	421	1,147	318	911	3	10	100	226
14. Achill	414	1,276	97	200	238	1,058	79	18
15. Clarinbridge	251	177	—	—	—	—	251	177
16. Kinsale	223	676	24	86	117	339	82	251
17. Baltimore	218	415	4	10	122	330	92	75
18. Helwick	217	606	115	389	47	165	55	52
19. Rosmore / Roscahill	193	375	—	—	—	—	193	375
20. Tralee	178	731	—	—	—	—	178	731
21. Bantry	175	483	11	43	102	332	62	108
22. Mornington	174	6,106	1	7	140	5,020	33	1,079
23. Schull	174	380	50	168	27	106	97	106
24. Dun Laoghaire	153	455	136	410	2	22	15	23
25. Westport	152	523	—	—	152	523	—	—

## APPENDIX No. 4

Imports and Exports of Fish and Fishery Products in 1977  
(as compared with 1976).

	Quantity		Value	
	1977	1976	1977	1976
	Metric tons	Metric tons	£'000	£'000
<b>I.—IMPORTS</b>				
Fish, fresh, chilled or frozen	3,939	4,041	3,635	2,401
Fish, salted dried or smoked	1,522	1,466	1,334	866
Shellfish, fresh, salted or dried	254	572	601	468
Prepared or preserved fish ...	1,849	1,647	2,801	1,977
Prepared or preserved shellfish	47	35	125	74
Fishmeals and Fishoils ...	15,454	13,434	4,748	2,906
<b>TOTALS</b> ...	<b>23,065</b>	<b>21,195</b>	<b>13,244</b>	<b>8,692</b>
<b>II.—EXPORTS</b>				
Fish, fresh, chilled or frozen	19,249	17,418	11,627	9,918
Fish, salted, dried or smoked	8,705	6,597	5,562	2,244
Shellfish, fresh, salted or dried	5,732	7,624	5,876	5,721
Prepared or preserved fish ...	1,468	3,306	1,286	1,724
Prepared or preserved shellfish	21	52	69	78
Fishmeal and Fishoils ...	3,603	4,040	940	905
Landed directly into foreign ports or transhipped at sea for export, by Irish regis- tered vessels				
I) Fish ...	5,510	2,843	1,845	523
II) Shellfish ...	339	5,286	243	1,946
<b>TOTALS</b> ...	<b>44,627</b>	<b>47,166</b>	<b>27,448</b>	<b>23,059</b>

## APPENDIX No. 5

## HERRING FISHING, 1977

Ports at which more than 1,000 metric tons were landed	Total Quantity	Total Value
	metric tons	£'000
1. Killybegs ... ..	9,814	2,412
2. Galway ... ..	2,444	587
3. Castletownbere ... ..	1,657	488
4. Howth ... ..	1,282	301
5. Achill ... ..	1,017	234

## APPENDIX No. 6

## MACKEREL FISHING, 1977

Ports at which more than 100 metric tons were landed	Total Quantity	Total Value
	metric tons	£'000
1. Killybegs ... ..	13,106	722
2. Castletownbere ... ..	6,716	603
3. Burtonport ... ..	2,155	134
4. Dingle ... ..	991	75
5. Valentia ... ..	899	70
6. Galway ... ..	412	40
7. Howth ... ..	304	23
8. Fenit ... ..	260	19
9. Mornington ... ..	200	6
10. Rossaveal/Carraroe ... ..	119	7

## APPENDIX No. 7

## REGIONAL DISTRIBUTION AND CLASSIFICATION OF FISHING CRAFT AND OF PERSONNEL ENGAGED IN FISHING IN 1977

I.C.E.S. Statistical Areas	How Engaged	Men	Total Vessels	MOTOR VESSELS							Boats propelled by outboard engines, sails or oars	
				Gross Tons							18' Keel and upwards	Under 18' Keel
				Over 100	75—99	51—74	26—50	16—25	11—15	10 and under		
AREA VIIA (Omeath to Helvick)	Solely	923	321	10	20	57	65	10	10	101	47	1
	Partially Laid-up	503	140 23		2	5	8	2	1	25	84 2	30 4
	TOTALS	1,426	484	10	22	62	73	12	11	126	133	35
AREA VIIIG-K (Helvick to Ballyheigue)	Solely	822	335	7	9	15	19	8	16	187	74	
	Partially Laid-up	1,014	270 18	2	1	3	10	1	1	24	197	49
	TOTALS	1,836	623	9	10	18	29	9	17	211	271	49
AREA VII B, C (Ballyheigue to Mullaghmore)	Solely	291	118	1	1	7	25	5	5	41	31	2
	Partially Laid-up	2,421	864 2			2	1			298	415	150
	TOTALS	2,712	984	1	1	9	26	5	5	339	446	152
AREA VIA (Mullaghmore to Moville)	Solely	626	124	18	12	22	41	11	1	11	8	
	Partially Laid-up	1,579	505 5			1 2	7 2	3		221 1	226	47
	TOTALS	2,205	634	18	12	23	50	14	1	233	234	47
TOTALS (all areas)	Solely	2,662	898	36	42	101	150	34	32	340	160	3
	Partially Laid-up	5,517	1,779 48	2	3	12	8 20	3 3	1 1	568 1	922 2	276 4
	TOTALS	8,179	2,725	38	45	114	178	40	34	909	1,084	283

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## APPENDIX No. 8

## TRAWLING AND SEINING, 1977

Port or Locality	Number of men engaged	Number of vessels engaged	Tonnage of Motor Vessels			Fishing Period
			Not exceeding 10 tons	Over 10 tons	Over 25 tons	
Clogherhead	78	18	1	2	17	All Year
Balbrigan	62	18	3	—	13	All Year
Skeries	130	26	—	—	26	All Year
Howth	185	35	1	—	34	All Year
Dublin	8	2	2	—	—	Occasionally
Dun Laoghaire	39	9	2	—	6	All Year
Wicklow	6	2	—	1	2	All Year
Arklow	40	10	—	—	10	All Year
Courtown	8	3	3	—	—	Occasionally
Rosslare	6	1	—	—	1	All Year
Carne/St. Helens	6	2	2	—	—	Occasionally
Kilmore Quay	111	21	—	—	21	All Year
Duncannon	26	7	2	—	4	Occasionally
Cheekpoint	4	2	2	—	—	All Year
Passage East	4	2	2	—	—	Occasionally
Dunmore East	60	10	—	—	10	All Year
Helvick	13	3	—	—	3	All Year
Youghal	6	3	3	—	—	Spring & Autumn
Ballycotton	10	5	5	—	—	All Year
Cobh	8	4	—	1	—	All Year
Cork/Crosshaven	56	2	—	—	2	All Year
Kinsale	4	1	—	—	—	All Year
Union Hall	31	7	—	—	—	All Year
Schull	29	5	—	—	—	All Year
Cape Clear	5	1	—	—	—	All Year
Castletownbere	80	12	—	—	12	All Year
Ballinskelligs	5	1	—	—	—	All Year
Valencia Island	15	3	—	—	3	All Year
Portmagee	19	3	—	—	—	All Year
Cahiriveen	8	14	—	—	14	All Year
Dingle	18	4	—	—	—	Winter
Fent	3	1	—	—	—	Summer
Seafeld/Quilly	95	19	4	—	—	All Year
Aran Islands	23	5	—	—	—	All Year
Galway	3	1	1	—	—	Spring & Summer
Spiddal	4	1	—	—	—	All Year
Rossaveal	4	1	—	—	—	Occasionally
Carra/Kilkerin	8	2	—	—	—	All Year
Cleggan	56	16	—	6	—	Occasionally
Achill/Mulrany	20	5	—	—	—	All Year
Belmullet/Blacksod	20	5	—	—	—	All Year
Killala	4	1	—	—	—	Occasionally
Sligo	280	44	—	—	—	All Year
Killybegs	140	25	—	—	—	All Year
Burtonport	16	4	—	—	—	All Year
Bunbeg	8	2	—	—	—	All Year
Magharoarty/Tory/Innisboffin	20	5	—	—	—	Occasionally
Urrus/Dunaff	12	3	—	—	—	All Year
Dunfanaghy	102	23	—	—	—	All Year
Greencastle	—	—	—	—	—	All Year
TOTALS	1,903	400	38	43	312	

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## APPENDIX No. 9A.

STATEMENT OF ACCOUNT IN RESPECT OF REPAYABLE  
ADVANCES

Advances of £13,627,563 made to An Bord Iascaigh Mhara during the period of twenty-six years to 31 December, 1977 for provision of boats and gear and other purposes:—

## Repayments of Principal:

	£
made to 31 December 1976 ...	1,382,643
made during year ...	219,148
Principal written off to 31 December 1977 ...	1,323,876
	<hr/>
	2,925,667
Balance of Principal outstanding at 31 December 1977	<u>10,701,896</u>



## APPENDIX No. 9B

EXPENDITURE ON FISHERIES FOR THE YEARS ENDED  
31 DECEMBER 1976 AND 31 DECEMBER 1977

(all figures rounded to nearest £1,000)

	1 Jan. 1977 to 31 Dec. 1977	1 Jan. 1976 to 31 Dec. 1976
<b>1. SEA FISHERIES</b>		
By (a) Department of Fisheries (Fisheries Division)	£	£
(i) Development ... ..	151,000	104,000
(ii) Fishery School ... ..	4,000	3,000
(iii) Fishery Harbours and other Marine Works ... ..	549,000	682,000
(b) An Bord Iascaigh Mhara		
(i) Administration and Current De- velopment (grant-in-aid) ...	2,575,000	1,425,000
(ii) Capital Development (grant-in-aid) ... ..	2,353,000	2,750,000
(iii) Repayable Advances* (mainly for boats and gear) ...	2,453,000	2,000,000
(iv) Repayment of Advances written off ... ..	115,000	120,000
(c) Roinn na Gaeltachta Grants for marine works ... ..	375,000	356,000
<b>2. INLAND FISHERIES</b>		
By (a) Department of Fisheries (Fisheries Division)		
Development ... ..	680,000	616,000
(b) The Inland Fisheries Trust Incorporated (grant-in-aid) ... ..	606,000	525,000
(c) The Salmon Research Trust of Ireland Incorporated (grant-in-aid) ...	10,000	9,000
<b>3. DEPARTMENT OF FISHERIES</b>		
Salaries, Wages and other administrative Expenses for Fisheries Division ...	689,000	569,000
<b>Totals</b> ... ..	<b>10,560,000</b>	<b>9,159,000</b>

\*A Statement of Account in respect of Repayable Advances is given in  
Appendix 9A.

## APPENDIX No. 10

COASTAL EXTENT OF FISHERY DISTRICTS AND NAMES  
OF THE PRINCIPAL RIVERS IN EACH DISTRICT

District	Coastal Extent of District	Principal Rivers
No. 1 Dublin	Most easterly point on Red Island, Skerries, to Wicklow Head.	Liffey Vartry.
No. 2 Wexford	Wicklow Head to Kiln Bay, east of Bannow Bay, Co. Wexford.	Slaney Avoca.
No. 3 Waterford	Kiln Bay, east of Bannow Bay, to Helvick Head, Co. Waterford.	Suir Barrow Nore.
No. 4 Lismore	Helvick Head to Ballycotton Pier, Co. Cork.	Blackwater, Funcheon, Bride, Awbeg.
No. 5 Cork	Ballycotton Pier to Crow Head, Co. Cork.	Lee, Owenboy, Bandon, Argideen, Ilen, Mealagh, Owvane, Coomhola, Glengarriff, Adrigole.
No. 7 Kerry	Crow Head, Co. Cork, to Kerry Head, Co. Kerry.	Roughty, Sheen, Finnihy, Blackwater, Sneem, Laune, Flesk, Maine, Caragh, Currane, Cummeragh, Inny.
No. 8 Limerick	Kerry Head, Co. Kerry, to Hag's Head, Co. Clare.	Shannon, Deel, Fergus, Mulcair, Little and Upper Brosna, Inny, Maigue, Feale.
No. 9 <sup>1</sup> Galway	Hag's Head to the sea point of the boundary between the townlands of Keeraunagark South and Banraghbaun South, Co. Galway.	Corrib, Claregalway.
No. 9 <sup>2</sup> Connemara	The sea point of the boundary between the townlands of Keeraunagark South and Banraghbaun South, Co. Galway, to Slyne Head, Co. Galway.	Ballinahinch, Recess, Cashla, Owengowla, Invermore, Inverbeg, Screebe, Furnace.
No. 10 <sup>1</sup> Ballinakill	Slyne Head to Pigeon Point, Westport Bay, Co. Mayo.	Culfin, Errif, Bundo- rragha, Dawros, Carrowniskey, Bun- owen (Louisburgh).
No. 10 <sup>2</sup> Bangor	Pigeon Point to Benwee Head, Co. Mayo.	Newport, Burrishoole, Owenduff, Owengarve, Owenmore, Glenamoy.
No. 11 Ballina	Benwee Head to Coonamore Point, Co. Sligo.	Moy, Cloonaghmore (Palmerston), Easkoy.

District	Coastal Extent of District	Principal Rivers
No. 12 Sligo	Coonamore Point to Carrickgarve, Co. Sligo.	Ballisodare, Garavogue (Sligo), Bonet, Drumcliff.
No. 13 Ballyshannon	Carrickgarve to Rossan Point, Co. Donegal.	Erne, Bundrowes, Bunduff, Eske, Eaney Water, Oily, Glen.
No. 14 <sup>1</sup> Letterkenny	Rossan Point to Malin Head, Co. Donegal.	Owenea, Gweebarra, Gweedore (Crolly), Clady, Lackagh, Lennon, Crana.
No. 17 <sup>2</sup> Dundalk	Carlingford Lough to Clogherhead, Co. Louth.	Fane, Dec, Glyde.
No. 17 <sup>1</sup> Drogheda	Clogherhead to the most easterly point on Red Island, Skerries, Co. Dublin.	Boyne, Blackwater, Deel.

**Note**—The area comprised in the former No. 14<sup>2</sup> or Merville District was, by the Foyle Fisheries Act, 1952, incorporated in the Foyle Area which is administered by the Foyle Fisheries Commission.

## APPENDIX No. 11

Quantity and Value of all Salmon and Sea Trout taken in 1975, 1976 and 1977 by Instruments of Capture.

## SALMON

	1977	1976	1975	1977	1976	1975
Instruments	kgs.	kgs.	kgs.	£	£	£
Total for all engines	1,305,351	1,491,888	2,188,304	4,581,784	5,301,737	3,013,531
Total for rod and line	38,505	43,024	52,167	135,153	151,884	71,395
Total for drift nets	981,023	1,046,108	1,482,257	3,443,391	3,722,256	2,048,368
Total for draft nets	226,306	304,387	530,287	794,334	1,079,211	724,833
Total for stake nets, weirs, etc.	59,517	98,369	123,593	208,906	348,386	168,935

## SEA TROUT

	1977	1976	1975	1977	1976	1975
Instruments	kgs.	kgs.	kgs.	£	£	£
Total for all engines	26,092	53,352	80,950	52,184	92,938	80,309
Total for rod and line	12,382	20,596	36,072	24,764	38,600	35,786
Total for drift nets	9,774	23,024	9,110	19,548	36,099	9,038
Total for draft nets	3,746	9,608	34,646	7,492	18,007	34,372
Total for stake nets, weirs, etc.	190	124	1,122	380	232	1,113

## APPENDIX No. 12

Quantity and Value of Salmon taken in 1975, 1976 and 1977 by Fishery Districts

Fishery Districts	*	Quantity			Value		
		1977 kgs.	1976 kgs.	1975 kgs.	1977 £	1976 £	1975 £
Dublin	R	672	754	217	2,359	2,659	296
	N	535	1,546	879	1,878	5,454	1,201
Wexford	R	2,038	1,305	1,628	7,153	4,605	2,225
	N	14,933	15,162	11,692	52,415	53,483	15,981
Waterford	R	5,328	6,005	3,929	18,702	21,182	5,370
	N	173,824	208,386	279,893	610,122	735,060	382,577
Lisnore	R	2,235	2,094	4,775	7,845	7,386	6,527
	N	125,433	119,243	173,342	440,271	420,617	236,935
Cork	R	1,680	3,435	2,825	5,897	12,115	3,861
	N	270,755	129,046	327,043	950,350	455,197	447,023
Kerry	R	3,100	3,223	4,174	10,881	11,368	5,706
	N	81,562	78,192	96,991	286,283	275,816	132,573
Limerick	R	5,113	3,804	9,262	17,947	13,418	12,660
	N	96,948	118,638	190,193	340,288	418,481	259,968
Galway	R	1,216	1,320	4,185	4,268	4,658	5,720
	N	38,575	66,498	118,105	135,398	235,507	161,435
Connemara	R	1,041	1,813	2,753	3,654	6,394	3,763
	N	7,219	5,160	14,783	25,339	18,202	20,207
Ballinakill	R	1,184	1,583	1,362	4,156	5,584	1,951
	N	7,282	6,779	17,159	25,560	23,913	23,455
Bangor	R	2,387	2,924	2,447	8,378	10,315	3,345
	N	76,748	107,438	142,774	269,385	378,978	195,152
Ballina	R	4,572	5,421	5,881	16,048	19,122	8,038
	N	128,580	234,428	235,919	451,316	826,919	344,790
Sligo	R	2,243	2,226	1,481	7,873	7,853	2,024
	N	10,888	13,783	16,118	38,217	48,619	22,032
Ballyshannon	R	1,900	2,017	2,096	6,669	7,115	2,866
	N	74,094	85,091	157,052	260,070	300,150	214,670
Letterkenny	R	3,128	4,573	4,457	10,979	16,131	6,092
	N	146,198	234,872	315,885	513,154	861,250	431,774
Dundalk	R	320	265	214	1,123	996	293
	N	6,711	13,519	23,656	23,556	50,669	32,334
Drogheda	R	348	262	481	1,221	983	658
	N	6,561	11,083	14,653	23,029	41,538	20,029
TOTALS	...	1,305,351	1,491,888	2,188,304	4,581,784	5,301,737	3,013,531

\* R indicates capture by means of single rod and line:  
N by means of nets, weirs, etc.

## APPENDIX No. 13

Quantity and value of Sea Trout taken in 1975, 1976 and 1977 by Fishery Districts

Fishery Districts	*	Quantity			Value		
		1977 kgs.	1976 kgs.	1975 kgs.	1977 £	1976 £	1975 £
Dublin	R	340	1,083	1,209	680	2,030	1,199
	N	6,379	2,107	4,195	12,758	3,949	4,162
Wexford	R	528	565	681	1,056	1,059	676
	N	891	899	2,368	1,782	1,685	2,349
Waterford	R	392	311	683	784	583	677
	N	414	4,461	417	828	8,357	414
Lismore	R	934	431	503	1,868	808	499
	N	143	1,299	1,977	286	2,435	1,961
Cork	R	769	1,556	2,371	1,538	2,916	2,353
	N	677	4,055	1,114	1,354	1,402	1,105
Kerry	R	1,890	2,324	4,297	3,780	4,355	4,263
	N	1,610	3,597	2,214	3,220	6,740	2,196
Limerick	R	936	2,206	8,421	1,872	4,134	8,355
	N	676	3,473	15,568	1,352	5,659	15,445
Galway	R	874	371	768	1,748	695	762
	N	244	2,154	2,197	488	4,036	2,179
Connemara	R	1,625	3,280	4,223	3,250	6,148	4,190
	N	160	2,449	983	320	4,590	976
Ballinakill	R	816	2,360	2,295	1,632	4,423	2,277
	N	291	4,478	1,197	582	8,392	1,188
Bangor	R	1,134	1,781	2,823	2,268	3,337	2,800
	N	520	383	1,798	1,040	718	1,784
Ballina	R	450	666	1,872	900	1,249	1,857
	N	378	446	1,570	756	836	1,558
Sligo	R	112	306	329	224	574	326
	N	121	794	378	242	1,487	375
Ballyshannon	R	111	356	629	222	666	624
	N	419	1,192	3,345	838	2,235	3,318
Letterkenny	R	861	743	2,758	1,722	1,392	2,736
	N	544	330	1,764	1,088	619	1,750
Dundalk	R	264	1,041	696	528	1,952	690
	N	192	448	1,751	384	839	1,737
Drogheda	R	346	1,216	1,515	692	2,279	1,503
	N	51	191	2,043	102	359	2,026
TOTALS	...	26,092	53,352	80,952	52,184	92,938	80,310

\* R indicates capture by means of single rod and line;  
N by means of nets, weirs, etc.

## APPENDIX No. 14

## Quantity and Value of Eels in 1975, 1976 and 1977 by Fishery Districts.

Fishery Districts	Quantity			Value		
	1977 kgs.	1976 kgs.	1975 kgs.	1977 £	1976 £	1975 £
Dublin ...	530	—	—	636	—	—
Wexford ...	4,021	8,000	8,137	4,825	13,200	14,321
Waterford ...	1,100	2,000	2,003	1,320	3,300	3,525
Lismore ...	530	3,800	102	636	6,270	180
Cork ...	—	—	787	—	—	1,385
Kerry ...	2,056	—	—	2,467	—	—
Limerick ...	38,100	60,000	34,996	68,580	99,000	61,593
Galway ...	24,150	27,000	17,567	43,470	44,550	30,918
Dangor ...	555	—	—	666	—	—
Ballina ...	8,000	4,200	2,180	9,600	6,930	3,837
Sligo ...	4,000	4,400	2,541	4,800	7,260	4,472
Ballyshannon ...	10,000	17,500	6,422	12,000	28,875	11,303
Dundalk ...	5,050	12,000	344	6,060	19,800	605
Drogheda ...	10,000	11,200	3,652	12,010	18,480	6,428
TOTALS ...	108,092	150,100	78,731	167,070	247,665	138,567

Note—The catch figures set out above are based on returns which are not complete. This explains any apparent inconsistency between the figures and the official export figures in any particular year.

## APPENDIX No. 15

Total Quantity and Value of Salmon, Sea Trout and Eels taken by all engines in 1975, 1976 and 1977.

Fishery Districts	Total Quantity for District			Total value for District		
	1977 Kgs.	1976 Kgs.	1975 Kgs.	1977 £	1976 £	1975 £
Dublin ...	8,456	5,490	6,500	18,311	14,092	6,858
Wexford ...	22,411	25,931	24,506	67,231	74,032	35,552
Waterford ...	181,058	221,163	286,925	631,756	768,482	392,563
Lismore ...	129,275	126,867	180,699	450,906	437,516	246,102
Cork ...	273,881	138,092	334,140	959,139	471,630	455,727
Kerry ...	90,218	87,336	107,676	306,631	298,279	144,738
Limerick ...	141,773	188,121	258,440	430,039	540,692	358,021
Galway ...	65,059	97,343	142,822	185,372	289,446	201,014
Connemara ...	10,045	12,702	22,742	32,563	35,334	29,136
Ballinakill ...	9,573	15,200	22,013	31,930	42,312	28,871
Bangor ...	81,344	112,526	149,842	281,737	393,348	203,081
Ballina ...	141,980	245,161	247,422	478,620	855,056	360,080
Sligo ...	17,364	21,509	20,847	51,356	65,793	29,229
Ballyshannon ...	86,524	106,156	169,544	279,799	339,041	232,781
Letterkenny ...	150,731	240,518	324,864	526,943	879,392	442,352
Dundalk ...	12,537	27,273	26,661	31,651	74,256	35,659
Drogheda ...	17,306	23,952	22,344	37,054	63,639	30,644
<b>TOTALS ...</b>	<b>1,439,535</b>	<b>1,695,340</b>	<b>2,347,987</b>	<b>4,801,038</b>	<b>5,642,340</b>	<b>3,232,408</b>



## APPENDIX No. 16

Number, Quantity and Value of Salmon taken by Single Rod and Line  
in 1975, 1976, 1977 by Fishery Districts.

Fishery Districts	No. of Fish			Quantity			Value		
	1977	1976	1975	1977 Kgs.	1976 Kgs.	1975 Kgs.	1977 £	1976 £	1975 £
Dublin	168	187	80	672	754	217	2,359	2,659	296
Wexford	551	351	442	2,038	1,305	1,628	7,153	4,605	2,225
Waterford	1,440	1,595	1,257	5,328	6,005	3,929	18,702	21,182	5,370
Lismore	721	691	1,210	2,235	2,094	4,775	7,845	7,386	6,527
Cork	542	1,117	853	1,680	3,435	2,825	5,897	12,115	3,861
Kerry	912	887	1,232	3,100	3,223	4,174	10,881	11,368	5,706
Limerick	1,382	1,010	2,852	5,113	3,804	9,262	17,947	13,418	12,660
Galway	380	410	1,139	1,216	1,320	4,185	4,268	4,658	5,720
Connemara	336	570	842	1,041	1,813	2,753	3,654	6,394	3,763
Ballinakill	370	455	409	1,184	1,583	1,362	4,156	5,584	1,951
Bangor	746	908	708	2,387	2,924	2,447	8,378	10,315	3,345
Ballina	1,475	1,700	1,826	4,572	5,421	5,881	16,048	19,122	8,038
Sligo	641	639	465	2,243	2,226	1,481	7,873	7,853	2,024
Ballyshannon	559	576	642	1,900	2,017	2,096	6,669	7,115	2,866
Letterkenny	948	1,306	1,213	3,128	4,573	4,456	10,979	16,131	6,092
Dundalk	82	66	51	320	265	214	1,123	996	293
Drogheda	87	52	111	348	262	481	1,221	983	658
TOTALS	11,340	12,520	15,332	38,505	43,024	52,166	135,153	151,884	71,395

**APPENDIX No. 18**

**PARTICULARS OF RECEIPTS AND EXPENDITURE BY BOARDS OF CONSERVATORS  
IN THE YEAR ENDED 30 SEPTEMBER, 1977.**

**PARTICULARS OF RECEIPTS AND EXPENDITURE BY BOARDS OF CONSERVATORS  
IN THE YEAR ENDED 30 SEPTEMBER, 1977.**

Fishery District	Opening Balance	RECEIPTS				EXPENDITURE				Total Expenditure	Closing Balance
		Licence Duty	Fishery Rate	Grant from Department	Misc. Receipts	Total Receipts	Wages	Legal Costs	Travelling and Misc.		
Dundalk	— 1,637	2,753	1,208	23,318	—	27,279	16,548	—	8,722	25,270	+ 372
Drogheda	— 89	4,126	3,855	25,244	9,899	43,124	20,014	1,242	23,004	44,260	— 1,225
Dublin	— 930	5,382	558	28,752	3,336	38,228	20,110	2,471	13,748	36,329	+ 969
Wexford	— 835	4,742	5,007	17,357	86	27,192	19,218	65	17,130	28,245	— 1,888
Waterford	— 3,567	17,374	3,791	41,929	1,194	64,288	55,376	2,682	17,130	75,188	— 14,467
Lismore	— 5,674	8,077	11,439	46,156	2,390	68,062	41,527	8	26,842	68,377	— 5,989
Cork	— 781	12,300	1,713	38,632	11,634	64,279	34,846	2,068	17,617	54,531	— 8,967
Kerry	— 8,590	8,949	7,077	41,772	761	58,559	48,972	1,111	10,097	60,180	+ 10,211
Limerick	— 10,011	17,125	11,918	49,608	5,562	84,213	65,820	1,054	16,605	83,479	— 9,277
Galway	— 3,776	4,786	13,048	10,000	2,499	30,333	18,741	2,431	8,508	29,680	— 3,123
Connemara	— 3,274	3,080	7,259	8,308	45	18,692	15,941	—	2,899	18,840	— 3,422
Ballinakill	+ 255	3,742	3,722	9,458	114	17,036	14,374	190	3,571	18,135	— 844
Bangor	+ 146	5,566	3,928	12,886	544	22,924	17,407	47	5,259	22,713	+ 357
Ballina	+ 919	9,919	45,244	7,000	1,893	34,056	23,914	73	8,289	32,276	+ 2,699
Sligo	+ 951	2,218	3,368	11,829	547	17,962	9,745	1,176	8,927	19,848	— 2,837
Ballyshannon	— 2,975	7,089	2,101	23,341	146	32,677	25,732	—	7,459	33,191	— 3,489
Letterkenny	— 8,539	18,683	4,752	24,650	587	48,672	41,492	315	4,839	46,646	— 6,513
TOTALS	— 50,309	136,111	99,988	420,240	41,237	697,576	489,777	14,933	192,478	697,188	— 49,921

## PARTICULARS OF LICENCES ISSUED BY BOARDS OF CONSERVATORS FOR THE YEAR 1977

Fishery District	Annual (all districts)	Annual (district of issue)	Late Season (all districts)	Twenty-one day (all districts)	Seven day (all districts)	Late season (district of issue)	Foyle Area (one district)	Foyle Area (all districts)	Special Local Licence (Tidal Waters)	Rod Net	Drift net	Pole net	Bag net	Stake net	Head Weir	Box or Crib	Loop net	Snap net	Gap, Eye or Basket for eels	Long line for eels	Oyster Dredge	Eel Trap
Dundalk	68	70	10	10	5	76					42								11	4		
Drogheda	117	142	19	19	10	140					70								2	4		
Dublin	349	68	54	54	22	11	16				11								2	4		
Wexford	107	210	2	2	47	162	16				75								10			
Waterford	60	272	7	7	193	17					9											
Fisnott	158	382	18	18	108	117					42											
Cork	104	392	11	11	703	256					133											
Kerry	168	1,211	16	16	131	200					76											
Limerick	75	75	43	43	127	53					118											
Galway	8	92	5	5	149	151					8											
Connemara	24	80	6	6	278	82					16											
Rathakill	59	81	5	5	239	64					30											
Bangor	47	388	8	8	576	140					10											
Ballina	43	168	4	4	25	25					4											
Sligo	50	129	5	5	142	71					95											
Ballyshannon	85	668	4	4	180	207					57											
Letterkenny											16											
TOTALS	1,592	5,196	217	28	2,979	1,772	16	52	27	55	650	997	5	8	1	32	25	141	122	64	371	11

## APPENDIX No. 20

## Licence Duties Payable on Fishing Engines.

	£
On each Salmon Rod—Annual (valid all districts) ...	10.00
Do. Salmon Rod—Late Season (valid all districts) ...	7.00
Do. Salmon Rod—Twenty-one day (valid all districts) ...	5.00
Do. Salmon Rod—Seven day (valid all districts) ...	3.00
Do. Salmon Rod—Annual (valid district of issue only) ...	5.00
Do. Salmon Rod—Late Season (valid district of issue only) ...	3.00
Do. Salmon Rod—Foyle area extension (valid all districts) ...	7.00
Do. Salmon Rod—Foyle area extension (valid district of issue only) ...	2.00
On each Draft net ...	30.00
Do. Drift net ...	50.00
Do. Snap net ...	12.00
Do. Bag net ...	30.00
Do. Stake net ...	50.00
Do. Head Weir ...	10.00
Do. Box or Crib ...	20.00
Do. Pole net ...	5.00
Do. Loop net ...	2.00
Do. Gap, Eye, Basket or Coghill Net for Eels ...	10.00
Do. Long line for Eels ...	10.00
Do. Oyster fishing engine ...	15.00

## LICENCE DUTIES PAYABLE ON FISHING ENGINES OTHER THAN THOSE MENTIONED ABOVE.

Fishery District	Fyke Net (provisional rates)	Eel Trap	Special Local Licences	
			Rod**	Draft Net
	£	£	£	£
1. Dublin ...	0.25	—	—	—
2. Wexford ...	0.25	20.00	—	—
3. Waterford ...	0.25	—	—	—
7. Kerry ...	0.25	—	—	—
91. Galway ...	2.00	20.00	—	—
102. Bangor ...	—	—	\$5.00	\$40.00
13. Ballyshannon ...	—	—	*5.00	*40.00
141. Letterkenny ...	—	—	\$5.00	†40.00
171. Drogheda ...	—	20.00	—	—
172. Dundalk ...	—	20.00	—	—

† River Lackagh Tidal Water.

† River Owenea/Owentocker Tidal Waters.

\* River Erne Tidal Waters.

§ Owenmore/Owenduff Tidal Waters.

Recommended price for Fyke Nets is 25p each or a net of 20 for £5.

Special Local Rod Licences \*\* may be reduced to £4 for holders of annual (ordinary) or annual (district) licences.

## APPENDIX No. 21

## PARTICULARS OF PUBLIC INQUIRIES HELD DURING 1977

Date of Inquiry	Where held	Subject Matter	Decision on Report of Inquiry
19th April, 1977	Ardara, Co. Donegal	(Reconvened) Application by Beirtreach Teoranta for an oyster fishery order in respect of part of Loughros Beg Bay.	Order granted
30th June, 1977	Bantry, Co. Cork	Application by West Cork Seafarms Limited for an oyster fishery order for the area known as Mulroe Cove at the head of Dunmanus Bay.	Under consideration
28th July, 1977	Carlingford, Co. Louth	Application by Carlingford Lough Oyster Co-operative Society Ltd. for an oyster fishery order in respect of part of Carlingford Lough.	Under consideration

## APPENDIX No. 22

ABSTRACT OF STATUTORY INSTRUMENTS MADE IN 1977  
GENERAL

- (1) Fisheries (Transfer of Departmental Administration and Ministerial Functions) Order, 1977 (S.I. No. 30 of 1977) dated 8th February, 1977, transfers to the Minister for Lands and the Department of Lands respectively, with effect from 8th February, 1977, the Ministerial functions and Departmental administration in relation to fisheries.
- (2) Lands (Alteration of Name of Department and Title of Minister) Order, 1977 (S.I. No. 29 of 1977) dated 8th February, 1977, alters the name and title of the Department of Lands and Minister for Lands with effect from 9th February, 1977, to the Department of Fisheries and Minister for Fisheries, respectively.
- (3) Sea Fisheries (Conservation and Rational Exploitation) Order, 1977 (S.I. No. 38 of 1977) dated 16th February, 1977, prohibits all fishing in the area designated in the Order and prescribes conditions to be observed by fishing vessels which enter the designated area for a lawful purpose.
- (4) Sea Fisheries (Conservation and Rational Exploitation) (No. 2) Order, 1977, (S.I. No. 39 of 1977) dated 16th February, 1977, makes an exemption from the prohibition of fishing in the area designated in the Sea Fisheries (Conservation and Rational Exploitation) Order, 1977 (S.I. No. 38 of 1977) in the case of fishing vessels of a specified size or having a specified engine power.
- (5) European Communities (Marketing of Fish) Regulations, 1977 (S.I. No. 114 of 1977) dated 15th April, 1977, prohibit the marketing of certain varieties of fish for human consumption unless they have been graded and labelled in accordance with the specifications contained in Council Regulation (EEC) No. 103 of 1976.
- (6) Prohibition on the Use of Live Fish as Bait in Fresh Water Bye-law No. 592, 1977 dated 15th April, 1977, prohibits the use of live fish as bait in fishing in fresh water.
- (7) Control of Fishing for Coarse Fish in Fresh Water Bye-law No. 595, 1977 dated 19th August, 1977, prohibits fishing or attempting to fish for or taking or killing coarse fish in fresh water by any means other than by rod and line except where the use of certain fishing engines is permitted by certain Bye-laws and prohibits the use or possession of two or more rods in fishing for coarse fish in fresh water.

- (8) Elections of Conservators (Postponement) Order, 1977 (S.I. No. 331 of 1977) dated 28th October, 1977, postpones elections of conservators due to be held in the year 1977 to the year 1978.
- (9) Control of Fishing for Salmon Order, 1977 (S.I. No. 372 of 1977) dated 9th December, 1977, regulates the issue of salmon fishing licences for fishing engines, other than rod and line, for use in public and private fisheries.

## LOCAL

- (1) Ballyshannon District Bye-Law No. 591, 1977 dated 25th February, 1977, prohibits fishing for salmon or trout with any fishing engine other than a rod and line in the tidal waters of the River Erne and the Abbey River upstream of the defined mouth of the River Erne from 1st March 1977 to 1st May, 1977 and extends by 24 hours the weekly close time in the same area in the year 1977.
- (2) Special Tidal Waters (Special Local Licences) Order, 1977 (S.I. No. 109 of 1977) dated 13th April, 1977, prescribes the special local licence duties payable in respect of fishing engines used in special tidal waters.
- (3) Cork District Bye-law No. 593, 1977, dated 26th May, 1977, prohibits all fishing in a specified part of the River Bandon.
- (4) Ballyshannon District Bye-law No. 594, 1977 dated 12th July, 1977, revokes Article 5 of the Ballyshannon District Bye-law No. 591, 1977.
- (5) Sea Fisheries (Conservation and Rational Exploitation) (No. 3) Order, 1977, (S.I. No. 232 of 1977) dated 13th July, 1977, prohibits herring fishing in that part of the Celtic Sea within the exclusive fishery limits of the State, viz. off the South and South-East coasts, prohibits having herring on board a sea-fishing boat or landing herring within the area where herring fishing is prohibited and prohibits certain types of factory ships from entering or remaining in the exclusive fishery limits of the State except for a lawful purpose.
- (6) Sea Fisheries (Conservation and Rational Exploitation) (No. 4) Order, 1977, (S.I. No. 233 of 1977) dated 13th July, 1977, prohibits herring fishing off the North-West coast as defined until 20th July 1977, prohibits having herring on board a sea-fishing boat or landing herring within prescribed parts of the area where herring fishing is prohibited.
- (7) Sea Fisheries (Conservation and Rational Exploitation) (No. 5) Order, 1977, (S.I. No. 259 of 1977) dated 4th August, 1977, prohibits herring fishing off the West and South-West coasts as

specified until 31st August, 1977, prohibits having herring on board a sea-fishing boat or landing herring at any landing place in the State that lies within the specified area and prohibits the sale, exposure for sale or having in possession for the purpose of sale anywhere in the State of herring taken or landed in the specified area and during the specified period.

- (8) Sea Fisheries (Conservation and Rational Exploitation) (No. 6) Order, 1977, (S.I. No. 260 of 1977) dated 4th August, 1977, prohibits herring fishing in specified areas off the east coast until 31st December 1977 and prohibits having herring on board a sea-fishing boat within the specified areas.
- (9) Sea Fisheries (Conservation and Rational Exploitation) (No. 7) Order, 1977, (S.I. No. 312 of 1977) dated 5th October, 1977, prohibits herring fishing by Irish sea-fishing vessels and prohibits having herring on board an Irish sea-fishing vessel in the Irish Sea up to and including 31st December, 1977.
- (10) Tralee Bay Oysters Close Season Bye-law No. C.S. 120, 1977, dated 7th October, 1977 prescribes the close season for oysters in Tralee Bay.
- (11) Tralee Bay Oysters Bye-law No. 596, 1977, dated 7th October, 1977 prescribes the times during which oysters may be taken from the Tralee Bay Oyster Beds and prescribes the places where oysters from the Tralee Bay Oyster Beds may be landed during prescribed periods.
- (12) Oyster Fishery (Ard Bay) Order, 1977 dated 25th November, 1977, grants to Beirtreach Teoranta certain exclusive rights within the limits of the oyster fishery described in the Schedule to the Order.
- (13) Oyster Fishery (Kilkieran Bay) Order, 1977 dated 25th November, 1977, grants to Beirtreach Teoranta certain exclusive rights within the limits of the oyster fishery described in the Schedule to the Order.
- (14) Castlemaine Harbour (Mussel Fisheries) Revocation Bye-law No. 597, 1977, dated 2nd December, 1977 revokes the Castlemaine Harbour (Mussel Fisheries) Bye-law, No. 446, 1941.
- (15) Oyster Fishery (Casheen and Coonawilleen Bay) Order, 1977 dated 13th December, 1977, grants to Beirtreach Teoranta certain exclusive rights within the limits of the oyster fishery described in the Schedule to the Order.
- (16) Oyster Fishery (Elly Bay) Order, 1977 dated 13th December, 1977, grants to Beirtreach Teoranta certain exclusive rights within the limits of the oyster fishery described in the Schedule to the Order.

- (17) Clew Bay Oysters Bye-law No. 598, 1977 dated 14th December, 1977, regulates the taking of oysters in Clew Bay.
- (18) Oyster Fishery (Loughros Beg Bay) dated 19th December, 1977, grants to Beirtreach Teoranta certain exclusive rights within the limits of the oyster fishery described in the Schedule to the Order.
- (19) Drift Nets for Salmon or Trout Fishing (Maximum Depth) Bye-law No. 599, 1977 dated 21st December, 1977, permits the use of drift nets of up to forty five meshes in depth in salmon or trout fishing in the Lismore Fishery District.
- (20) Sea Fisheries (Conservation and Rational Exploitation) (No. 8) Order, 1977 (S.I. No. 402 of 1977) dated 30th December, 1977, extends the ban on herring fishing in certain areas off the east coast or having herring on board a sea-fishing vessel within such areas, as imposed by the Sea Fisheries (Conservation and Rational Exploitation) (No. 6) Order, 1977, up to and including 31st January, 1978.
- (21) Sea Fisheries (Conservation and Rational Exploitation) (No. 9) Order, 1977 (S.I. No. 403 of 1977) dated 30th December, 1977, extends the ban on herring fishing by Irish sea-fishing vessels or having herring on board an Irish sea-fishing vessel in the Irish Sea, as imposed by the Sea Fisheries (Conservation and Rational Exploitation) (No. 7) Order, 1977, up to and including 31st January, 1978.

#### FOYLE AREA

- (1) Foyle Area (Control of Fishing) Regulations, 1977, dated 22nd April, 1977, provide certain adjustments of the periods during which netting is suspended on the waters of the Foyle area, stipulate the conditions under which netting in the Foyle Area will be terminated prior to the normal closing of the netting season, prohibit angling in the tidal waters of the River Foyle during any period when netting is suspended on those waters and provide for the angling season on the Rivers Faughan, Mourne, Roe and Strule and their tributaries to be terminated from 11th October if the numbers of salmon counted going upstream are below predetermined numbers.
- (2) Foyle Area (Angling) Regulations, 1977, dated 22nd April, 1977, specify the methods of angling which are permitted in certain waters, provide for a minimum length and number of fish which may be retained on any one day, specify certain stretches of river where angling is prohibited and restrict the use of boats for angling on certain waters.



## APPENDIX No. 23

## OUTPUT AND DISPOSAL OF FISH HATCHERY PRODUCE 1976/77

Hatchery	Output (Ova)			Disposal (000)	River System Stocked (000)
	Salmon (000)	Sea Trout (000)	Brown Trout (000)		
Parteen	1,659		200	41 Ova 687 Fingerlings  193 Smolts  86 Ova 92 Ova	Liffey Mulcair and tributa- ries, Suck, Brosna, Inney, Silver River Mulcair, Suck, Brosna, Inny, Sil- ver River, Maigue, Kilcrow River and Shannon. Liffey area. Local planting, Lough Derg and Local Clubs.
Carriga- drohid	1,003			457 Ova  248 Fingerlings 162 Smolts	Ballyshannon, Liffey and Cork Board of Conservators. River Bride and Shournagh. River Lee.
Fanure			800	300 Ova 258 Fry 1 Summerling 167 Fingerlings 16 Spring yearlings 17 Autumn yearlings 34 2 year olds 3 adults	Various Trust waters in Cos. Cavan, Sligo, Galway, Westmeath, Ros- common and Ang- ling Interests.
Mullingar			1,209	20 Ova 995 Fry 288 Fingerlings 96 Spring yearlings 61 Autumn yearlings 6 2 year olds	Various Trust waters in Cos. Cavan, Sligo, Galway, Westmeath, Ros- common and Ang- ling Interests.

## APPENDIX No. 23 (contd.)

Hatchery	Output (Ova)			Disposal (000)	River System Stocked (000)
	Salmon (000)	Sea Trout (000)	Brown Trout (000)		
Screebe		30		30	Screebe Fishery
Cong	115			20 Fingerlings	Cornamona
(received from Carrowmore Lake)	65			20 "	Moy
				10 "	Clare
				10 "	Cong
				20 "	Bangor Erris Area
Glenties	273			30 Ova	Rosses Angling Association
				20 "	Eany
				20 "	Sligo Area
				15 "	Buncrana
				50 "	Cloughaweely Angling Association
				138 "	Owenea
Salmon Research Trust, Furnace	94			65 fingerlings reared to smolt stage for research purposes	
Virginia	500		80	232 Fingerlings	Boyne System
				5 "	Dee
				5 "	Glyde
				20 "	Retained for rearing to smolt stage
				43 Fingerlings	Boyne System
				5 "	Mulagh Lake
				3 "	Dee
				3 "	Glyde
Carrowmore Lake Incubation Unit	65			65 Ova	To Cong Hatchery for rearing to fingerlings stage and release in the Bangor Erris area.
Inistioge	300			100 Ova	Barrow
				30 "	Suir
				170 "	Nore
Mallow	1,250			750 Fry	Tributaries of the River Blackwater.
				150 Eyed Ova	Suir and Nore
				35 "	Waterville Hatchery
				112 "	River Feale
				100 "	Kenmare River

## APPENDIX No. 24

## SCIENTIFIC AND OTHER PAPERS

## 1. DEPARTMENTAL

## A. IRISH FISHERIES INVESTIGATIONS

Series B. (Marine)

No. 17. J. H. Wilson. The growth of *Mytilus Edulis* from Carlingford Lough.

## B. FISHERY LEAFLETS

No. 82. A. E. J. Went. Scientific and Fisheries Management.

No. 83. D. T. McCarthy. Movement of Salmon from the South coast in 1975.

No. 85. J. Browne. Recaptures of Irish Tagged Salmon off Greenland.

No. 86. J. Molloy. The Herring fisheries on the South and South-West coasts, 1976-77.

No. 87. J. Molloy and K. Bhatnager. Preliminary Investigations of the Sprat stocks off the South coast of Ireland.

No. 88. J. Molloy and T. D. Kennedy. Herring investigations on the North-West and West coasts, 1976.

## C. OTHER

D. O'Sullivan and M. Parker. Heavy Metal Workshop Proceedings. Mimeo.

## 2. OTHER PUBLICATIONS

M. Crowley, D. O'Sullivan and M. Parker. Sea Fisheries and Coastal Pollution. Technology Ireland, March 1977.

M. Crowley, D. O'Sullivan and M. Parker. Pollution and Ireland's Coastal Harvest. An Taisce Journal, Vol. 1, Part 3.

M. Parker. Estuarine and Coastal Research of the Aquatic Environment Unit, Department of Fisheries, Dublin. Review. Bulletin of the Estuarine and Brackish-water Sciences Association, April 1977.

B. Ottway\*, M. Parker, D. McGrath\*, M. Crowley (\*U.C.G.). Mortalities of littoral and sub-littoral organisms associated with an algal bloom on the South coast of Ireland, Summer 1976. I.C.E.S., CM 1977/L.32.

D. O'Sullivan. A comparison of heavy metal levels in seaweeds and shellfish from areas of the Irish coast. I.C.E.S., CM 1977/E.56.

